LAKE HELENA
WILDLIFE MANAGEMENT AREA
MANAGEMENT PLAN

AUGUST 2003

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August 2003

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Date

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INTRODUCTION

The Lake Helena Wildlife Management Area (WMA) (Fig. 1) was purchased by Montana Fish, Wildlife & Parks (MFWP) in 1988 from Wesley and Dolores Johnson. The WMA occurs in the northeast corner of the Helena Valley, approximately 10 miles from Helena, Montana.

The primary purposes in acquiring the 157.06 acre WMA was to improve waterfowl production and staging habitat on Lake Helena and the Helena Valley in general, and to provide waterfowl hunting access to Lake Helena. Over the years, access to Lake Helena has become increasingly limited. It is the intent of the department's Wildlife Division to provide low maintenance Wildlife Management Areas while providing suitable wildlife habitat for that area.

The Lake Helena WMA was purchased with funds from Montana Waterfowl Stamp monies (30%), Ducks Unlimited MARSH monies (30%) and Montana Department of Fish, Wildlife and Parks hunting license dollars (40%) for $109,885.30.

This Management Plan provides for the needs of wildlife (protect and/or enhance soil, water, vegetation) by addressing terms of land use practices, water management, and public access with emphasis on improving wildlife habitat primarily for waterfowl and water dependent bird species. It is intended that this plan be updated periodically to maintain its value as a flexible working document. Appendices include baseline natural resource inventory including historical and physical descriptions, wildlife survey data, list of legal documents and policies pertinent to the property, travel management plan, and annual work plans. Unless otherwise noted, strategies described in Objectives will be the responsibility of MFWP. Hunter access is provided to the WMA with other recreational activities allowed to the extent that they do not compromise the purposes for which the WMA was purchased. This Management Plan addresses management of the WMA itself and certain restricted uses of the lake as specified by the MFWP Commission.

Background information relative to the Lake Helena WMA is on file in the Region 3, Helena Area Resource Office of FWP, unless otherwise stated.

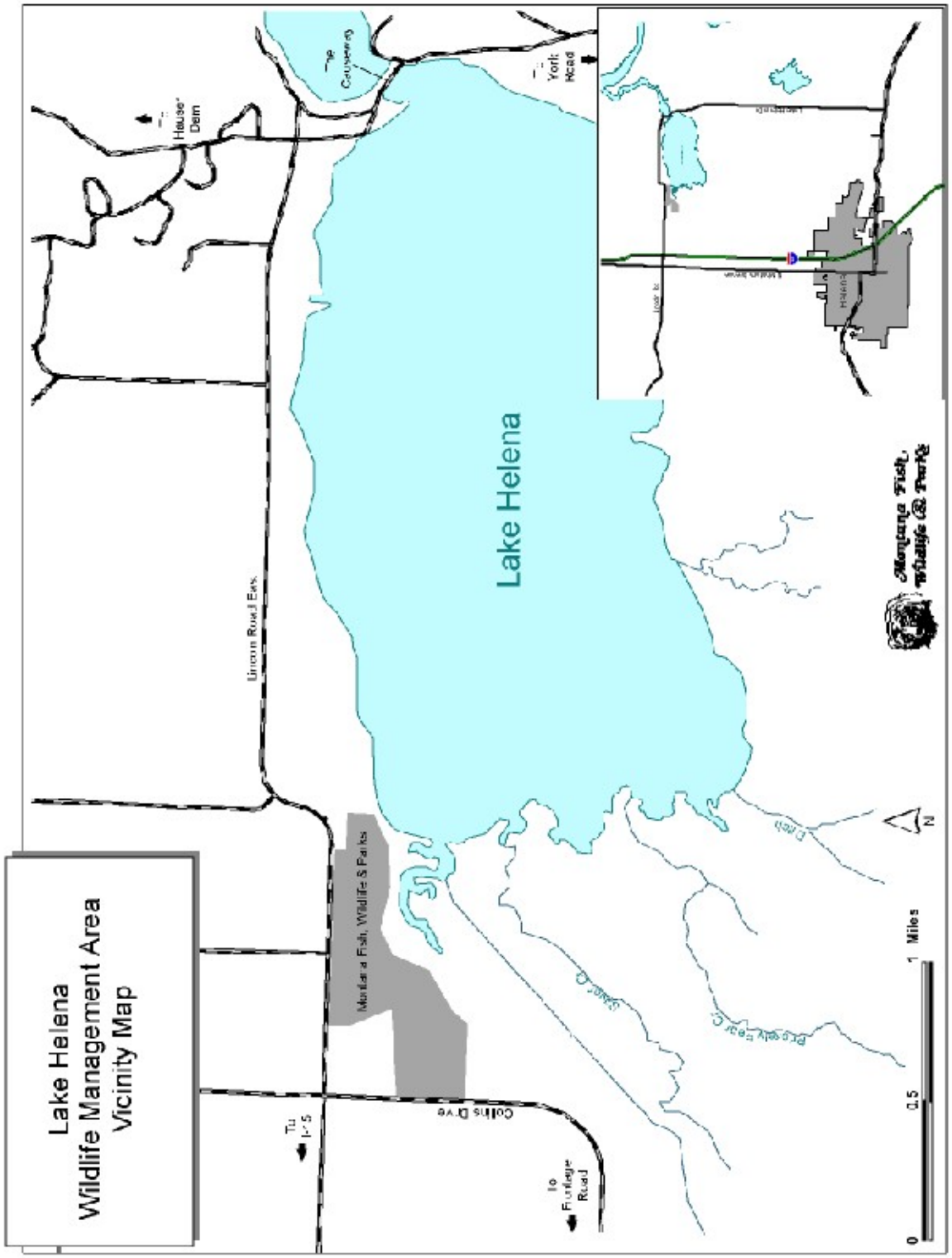
GOALS

The goals in managing the Lake Helena WMA are to conserve and improve the soil and vegetation of the wildlife management area and suitable environments on the lake and associated floodage zone in order to:

- encourage waterfowl production potential,
- provide waterfowl staging areas, and
- maintain public waterfowl hunting opportunities
- wildlife-related recreational access to the lake.

Other recreational endeavors may be allowed in so far as they do not detract from the primary purposes for which the WMA was acquired.

Figure 1. Lake Helena Wildlife Management Area Vicinity Map



OBJECTIVES

OBJECTIVE 1: IMPROVE WATERFOWL PRODUCTION AND RECRUITMENT

Improve waterfowl production and recruitment through land stewardship programs that stimulate the landscape to achieve its maximum potential, and where appropriate provide supplemental nesting structures.

Issue 1.1: Attractive nesting cover was deficient in quality and quantity on portions of the WMA, when the property was acquired. This was particularly true on historically heavily grazed uplands.

Strategies

1.1.a. Residual cover for upland nesting waterfowl and song birds has substantially improved from the time of purchase through rest from grazing and will be maintained.

1.1.b. Continue to document changes in vegetation structure through established photo plots on three representative upland sites to quantify and assess adequate cover for upland nesting waterfowl.

1.1.c. Improve emergent vegetation along pond margins through water level manipulation. This will increase the amount of edge along pond margins, providing more pair habitat. Also, some species utilize emergent vegetation zones for nesting and as escape cover during the molt.

1.1.d. Install nesting structures (culverts, poles, tubes, boxes, etc.) where appropriate on the WMA and on cooperating private landowner properties adjacent to Lake Helena contingent on availability of volunteer hel.

Issue 1.2: Inadequate brood rearing habitat (proper cover/food) contributes to poor survival of young resulting in poor recruitment. For geese, it is important to have attractive grazing areas adjacent to production areas. For ducks, emergent shoreline vegetation in association with good production of submergent vegetation is attractive brood rearing habitat.

Strategies

1.2.a. Improve emergent vegetation along pond margins through water level manipulation. This will increase the amount of edge along pond margins, providing more brood cover. Also, some species utilize emergent vegetation zones for nesting and as escape cover during the molt.

1.2.b. In the future, it may become necessary to improve brood rearing areas along the shores of Lake Helena for geese if cattle grazing is suspended. Almost no opportunity to provide brood rearing areas occurs on the LHWMA since the WMA does not extend to

the lake. Owners of Lake Helena shoreline could be approached to see if they would be willing to improve brood rearing shoreline habitat through appropriate cattle grazing, willow control and grass seeding. Habitat enhancement incentives or possible easement options could be utilized. Currently geese brood rearing habitat exists along the south and portions of the north shore of Lake Helena because these areas are grazed by cattle.

Issue 1.3: Breeding pair habitat is limited for ducks. Although visual isolation is generally not a problem at the west end of Lake Helena, the ratio of open water interspersed with emergent vegetation is restricted, resulting in territorial encounters and minimizing breeding pair densities (Ringelman 1991).

Strategies

1.3.a. Construct islands within the lake to provide secure nesting sites, if island construction can be arranged

1.3.b. Develop additional small ponds to improve breeding pair habitat.

1.3.c. Improve pair water by selectively removing emergent vegetation to increase the interface between open water and emergent nesting cover.

Issue 1.4: Seasonal foods may be limited. Aquatic insects are important food items particularly in the spring for nesting ducks and during summer for brood rearing. Submergent vegetation not only provides habitat for insects but is a valuable food source during the summer and fall. Waste grain on adjacent private agricultural fields is an important food during spring and fall.

Strategies

1.4.a. Improve submergent vegetation production by encouraging commercial fishing on Lake Helena to reduce rough fish that damage aquatic vegetation. Carp populations, upon reaching 3-5 years old, seriously reduce submergent vegetation through their rooting feeding behavior. For a variety of reasons (sheer volume of Lake Helena, economic considerations, technical inability to completely drain the lake, Missouri River flow maintenance controlled by PP&LM and the Federal Energy Regulatory Commission), the water level of Lake Helena cannot be adequately drawn down to eliminate carp. Since carp are able to enter the lake through the Causeway, it is recommended that commercial fishing or some other method to remove carp, be encouraged on Lake Helena.

1.4.b. Seasonal food sources for waterfowl are likely to become limiting as the Helena Valley is converted from an agricultural land base to suburban development. Possible opportunities for implementing hay-grain rotations on adjacent fields should be evaluated in the context of grain availability and distribution in the Helena Valley. Owners of strategically located agricultural fields might be approached regarding possible acquisitions or easement arrangements.

Issue 1.5: Predation on nests and young can be excessive. Mammalian predators in particular destroy both duck and goose nests.

Strategies

1.5.a. Implement programs to minimize predation when documented to be the main cause of nest failure. This can be accomplished through habitat improvement and/or predator removal. Trapping programs are expensive and time-consuming and must be intensive to be effective. They can also be controversial with some segments of the public. However, they can be cost-effective if conducted at the appropriate time of year. Currently, recreational trapping is allowed on LHWMA during the winter by permit only. Recreational trapping by itself will not control predation of nests. Trapping can reduce numbers of some species, such as fox, which have been increasing in recent years.

1.5.b. Reduce predator habitat by removing old buildings and blocking culverts, as well as other passive means of predator control.

1.5.c. Improve nesting cover over the entire management area by creating blocks of attractive cover.

1.5.d. Construct islands within the lake to provide secure nesting sites, if financial and logistic resources can be arranged for such a project.

1.5.e. Expansion of wetlands throughout the WMA through water level manipulation may be a deterrent to some predators.

OBJECTIVE 2: MAINTAIN/IMPROVE WATERFOWL RESTING AREAS

Issue 2.1: Repeated disturbance can render loafing habitat ineffective. Waterfowl require undisturbed rest areas.

Human activities have increased on the lake, creating conflict during sensitive seasonal periods for birds. These sensitive periods include nesting, brood rearing, molting, and resting during spring and summer as well as open water/ice edge rest areas during winter. Human activities on the lake include hunting, fishing, long-line bow hunting of carp, increased wildlife viewing, non-wildlife related recreation on the water and ice, and commercial fishing. Unforeseen future activities will probably occur as well. Unrestricted boating may cause some species to desert their nests or may lower productivity. People launch boats during the spring and summer from the WMA access road, and venture into sensitive areas subsequently flushing waterfowl from nests. Some bird enthusiasts are interested in viewing birds from canoes. The practice of carp hunting from boats, using bows and long line arrows, has been increasing. Possible nest failure or other negative consequences for both waterfowl and other bird species are likely to result. Such uses are expected to escalate as interest in these forms of recreation increase.

Strategies

2.1.a. Strictly enforce the waterfowl rest area closure.

2.1.b. Mark the waterfowl rest area closure with permanent buoys or islands.

2.1.c. Post requests for people to voluntarily limit activities during the March 1—August 30 period along the western shoreline of the lake during the spring and summer (to include the WMA and the western shoreline to the west boundary of the waterfowl closure area). Such a request would not prevent people from approaching or using the shoreline occasionally but the intent would be to reduce such use during sensitive periods.

2.1.d. An educational effort to keep people abreast of the needs of birds and their habitat could be intensified at the WMA informational kiosk.

2.1.e. Identification of anchor points and timing restrictions for commercial carp fishing would minimize waterfowl impacts (previously implemented, 1993).

2.1.f. Administrative activities in recognized sensitive areas should be minimized during the nesting season.

2.1.g. Commercial activity will not be allowed on the WMA.

2.1.h. Monitor use of the lake and surrounding area by conducting established bird surveys

OBJECTIVE 3: MAINTAIN/IMPROVE ECOLOGICAL DIVERSITY AND STABILITY

Maintain or improve the ecological diversity and stability of the area, and within the parameters of existing habitat, encourage nesting and production of native birds and thereby provide for wildlife viewing opportunities.

Issue 3.1: Nesting habitat for some endemic species is limited.

- Certain species nest on floating mats of aquatic vegetation.
- Many song-bird species utilize emergent vegetation as nesting habitat.
- Shrubs on the WMA are important nesting habitat for some bird species.

Strategies:

3.1.a. Artificial nest structures will continue to be maintained and appropriately established adjacent to the WMA and Lake Helena (blue bird boxes have been placed along the boundary of the WMA) to provide nesting opportunities for cavity dependent species.

3.1.b. Structures for osprey could be erected to provide more nesting habitat.

3.1.c. Adopt a blue bird box route – encourage a group to monitor and maintain the boxes.

3.1.d. Encourage an active commercial fish harvest program on Lake Helena to reduce the old, large carp population. This would improve the size of available rough fish as food for some bird species as well as encourage growth of aquatic vegetation that is used by certain bird species on which to construct floating nests, and would increase aquatic insect food sources.

Issue 3.2: The presence and spread of noxious weeds contributes to ecological damage, thus reducing native vegetation used by wildlife for food and cover. (See Work Plan for on-going activities.)

- Some weed-infested areas adjacent to water are hard to control because certain restricted chemicals can not be used.
- Some adjacent landowners are not treating weed infestation on their lands, or are using ineffective methods.
- There may be a public perception that FWP is not aggressively treating weed infestations on the WMA.

Strategies:

3.2.a. Control noxious weeds along project roads, canals, boundary fences, and heavy use areas such as parking areas by using chemical and other means of control.

3.2.b. Control infestations of noxious weeds in a manner compatible with a waterfowl management area, according to the MDFWP Region 3 Noxious Weed Management Plan

3.2.c. Use treatment methods other than chemical to control or contain infestations in particularly sensitive areas. These may include hand pulling, mechanical means, or biological control agents.

3.2.d. Minimize disturbance to upland nesting waterfowl and song birds by applying chemical treatments during late summer/early fall.

3.2.e. Weed control must be monitored to prevent accidental mortality of shrub species.

3.2.f. Work with adjacent landowners and the County Weed Board to control infestations occurring on FWP and adjacent private lands.

3.2.g. Post a notice in the WMA kiosk that weeds are controlled on the WMA, including methods and timing.

3.2.h Compile an inventory of plant species occurring on the WMA.

OBJECTIVE 4: MAINTAIN WATERFOWL HUNTING ACCESS

Maintain access to the lake for waterfowl hunting opportunity and wildlife-related recreational pursuits in keeping with the goals and objectives of the purchase of the property. Other recreational endeavors may be allowed in so far as they do not detract from the primary purposes for which the WMA was acquired.

Issue 4.1: Diminishing Public Access

- In years past, public access to Lake Helena as well as the Helena Valley in general has diminished with closures or imposition of lease hunting by private landowners who control most of the lake's shoreline.
- A short-term lease (until 12/2005) exists between PP&LM and MFWP allowing public access to lands between the low and high water levels of the lake adjacent to the WMA.
- Another public access to the lake exists at the Causeway, but no boat launching facilities exist on Lake Helena from the Causeway, so most water based access demands are occurring though the WMA, which in turn is creating conflict with the purposes for which the property was purchased.
- Handicapped access and those wishing to hand launch canoes cannot get through the gate at the parking lot.

Strategies:

4.1.a. Investigate potential access points to the lake through neighboring landowners.

4.1.b. Investigate the potential use of Access Montana or Block Management programs to provide hunting access through other lands surrounding the lake.

4.1.c. Investigate acquiring a Fishing Access Site, preferably on the deeper east end of the lake where boat launching can be accommodated, but conflicts with wildlife would be inevitable.

4.1.d. Pursue an easement with PP&LM, or some other long-term venue, to assure public hunting access to Lake Helena.

4.1.e. Post Travel Management Plan and other management regulations at the WMA kiosk.

4.1.f. Maintain the main access road into the WMA.

4.1.g. Create a modest parking area off of Collins Drive to accommodate 4 vehicles.

4.1.h. The headgate/pond entrance off of Lake Helena Drive offers a third entrance to the WMA, but is not designed to accommodate public parking.

4.1.i. Design and install a gate at the main parking lot that will allow wheelchair access and canoes to be drug or wheeled through the gate.

4.1.j. Strictly enforce Travel Management provisions.

Issue 4.2: Fluctuating water levels may impact recreational users of the lake.

Draw-downs of the Missouri River above Hauser Dam for various purposes, including construction projects occurring within the river channel, have reduced Lake Helena to expansive mud flats with a single steam channel flowing through the center of the lake bed. These circumstances have compromised the goal of the WMA for waterfowl hunting, as well as nesting, resting, and foraging for waterfowl and shorebirds.

Strategies:

4.2.a. Develop a cooperative agreement with PP&LM to retain water in Lake Helena when draw-downs of the Missouri River are necessary. This would require:

- Retrofitting the Causeway with steel plates that could be lowered into place to hold water in Lake Helena during the river draw-down;
- Cost sharing between PP&LM and MFWP to implement the plan;
- Communication between PP&LM and MFWP to activate the Lake Helena water retention plan as necessary.

Issue 4.3: Conflict between recreational users of the WMA must be resolved.

Strategies:

4.3.a. Articulate at the WMA interpretive kiosk that:

- the WMA was purchased with hunter dollars
- wildlife habitat is the top priority of the WMA
- hunting takes precedence over other recreational uses during the hunting season

4.3.b. Allow winter ice-recreationists to use the WMA (following all regulations) from the end of the waterfowl hunting season to the beginning of the return of spring waterfowl (March 1). If conflicts with either waterfowl or hunters results from other recreationists utilizing the WMA for access to the lake, then liberal use of the WMA for public access will be reconsidered.

APPENDIX A: HISTORY

During the early 1900's, the Helena Valley was agriculturally developed for irrigated crop lands by farmers independently diverting water from perennial streams. In the late 1940's, approximately 10,000 acres were irrigated from waters of Prickly Pear Creek and several thousand acres more were irrigated from Tenmile and Sevenmile Creeks (Gieseker 1947). In 1912, the Montana Reservoir and Irrigation Co. was organized, contracting to supply the farmers with irrigation water for a 30-year period. Two pumping plants were built along Lake Helena, the source of water for the project. Approximately 10,000 acres of land were irrigated by the project. After the contract was fulfilled, the project was run by the Montana State Water Conservation Board, and then by the Bureau of Reclamation (Lorenz and Swenson 1951).

An historical perspective of the Lake Helena area is presented in a 1959 document, known as the Kistner report - "Preliminary Appraisal Report for Lake Helena Bird Management Area". This report was prepared by the Montana Fish & Game Department for the U.S. Department of Interior, the U.S. Fish and Wildlife Service, and the Bureau of Sport Fisheries and Wildlife in preparation to acquire lands adjacent to Lake Helena. Excerpts of that report follow:

> Water projects in the Helena Valley date back to 1900 when the first dam was constructed to form Lake Hauser for hydro-electric power. This dam was breached in 1908. The present dam was constructed in 1910 at the present location. Lake Helena in reality is a large backwash of Lake Hauser with generally the same pool elevation. Therefore, it might be said, that with slight modifications, Lake Helena was created in 1900. Originally there was merely a channel between the two water bodies. However, in 1944 the steel bridge was condemned. At that time, Lewis and Clark County, the Montana Fish and Game Department, and the Montana Power Company all cooperated in the construction of a concrete, earth-fill causeway which is the present crossing. This causeway could also be used as a control structure for regulating the elevation of Lake Helena.
>
> In 1945, the water elevation of Lake Hauser was lowered to 3,622 feet. At this elevation, Lake Helena, with the exception of a narrow shallow channel on the bottom, became dry. The lake was then poisoned with copper sulfate to eliminate the carp. An electrical device was installed in the causeway to prevent re-infestation from Lake Hauser. The electrical system was inadvertently shut off and Lake Helena became re-infested with carp. At the present time there is a large carp population in Lake Helena.
>
> The overgrazing by domestic livestock around the lake has practically eliminated the vegetation around Lake Helena. Information from the past indicates that these adjacent areas had good vegetative cover. There were even floating islands of vegetation. If domestic livestock grazing can be controlled, emergent vegetation can again become established. When this is done, the area will again become an

important waterfowl area. Even under present conditions, this area produces approximately 75 geese annually.

The Kistner report detailed an appraisal for 3,568 acres of land involving eight private landowners, the Bureau of Reclamation and the Montana Power Company. The average appraised per acre value was $40.94, including agricultural, hay, grass, brush, marsh, and water (flooded) lands.

This specific package was modified and eventually became a formal proposal that was submitted in 1961, by the Department to the Secretary of Interior, for purchase of 1,485.5 acres of fee title lands and all permanent floodage land of the Montana Power Company surrounding Lake Helena, and was to be known as the Lake Helena Bird Management Area.

Federal Aid in Fish and Wildlife Restoration Act (64 Stat. 430) monies were sought for the Lake Helena Bird Management Area project. Poor land management practices were cited as the rationale for the acquisition: "Lake Helena has long been noted for its value as a production and harvest area for waterfowl. However, overgrazing has practically eliminated the emergent and shoreline vegetation seriously reducing its productive capacity. The grazing problem could be corrected under state control and management".

Although the acquisition portion of this project did not receive financing, a 20 year lease, in the amount of $1 per year, was obtained from Montana Power on June 27, 1961, granting public use of 576.55 acres of lands between the low and high water marks. Subsequent payments were paid annually or in 10 year increments until March, 1990, when the lease expired and the Federal Energy Regulatory Commission (FERC) initiated the process of re-licensing hydroelectric facilities on the Missouri River system. Between 1991 and 2001, there was some uncertainty about the public's legal ability to use the property in the zone between low and high water. MFWP solicited Pennsylvania Power & Light – Montana (PP&LM) for public access usage and was granted a 5 year access lease (Permit No. 2000-1).

Efforts to secure lands surrounding Lake Helena for the benefit of wildlife and sportsmen date back to the 1940's when Brian and Hazel O'Connell owned key parcels of the property around the lake. The O'Connell's were sympathetic to the concerns of the Helena Wildlife Association of Montana, whose charter it was to "dedicate [their efforts] to the improvement and betterment of conditions necessary, to a more full and simple enjoyment of outdoor sports and recreation, particularly hunting and fishing in Lewis and Clark County, Montana".

A perpetual easement was granted by the O'Connell's to the Helena Wildlife Association (Appx. E) to provide access to Lake Helena with provisions that the Association and Montana Department of Fish and Game would improve and maintain roads, install and maintain stock crossings, and culvert crossings. The easement would terminate when the area ceased to be used as a bird refuge, or when a written proclamation was issued by the Fish and Game Commission wherein it would be stated that there was no further need for the use of the land by hunters and fishermen of the State of Montana. The easement was "binding upon the heirs, executors, administrators, successors and assigns of the parties… ." The O'Connell easement granted

public use of a 150 yard strip around the western edge and a portion of the southern edge of the lake above the high water mark. Current interpretation is that the O'Connell easement lapsed because the department did not maintain roads and culverts. The easement appears on all deeds that have been transferred to all successive landowners.

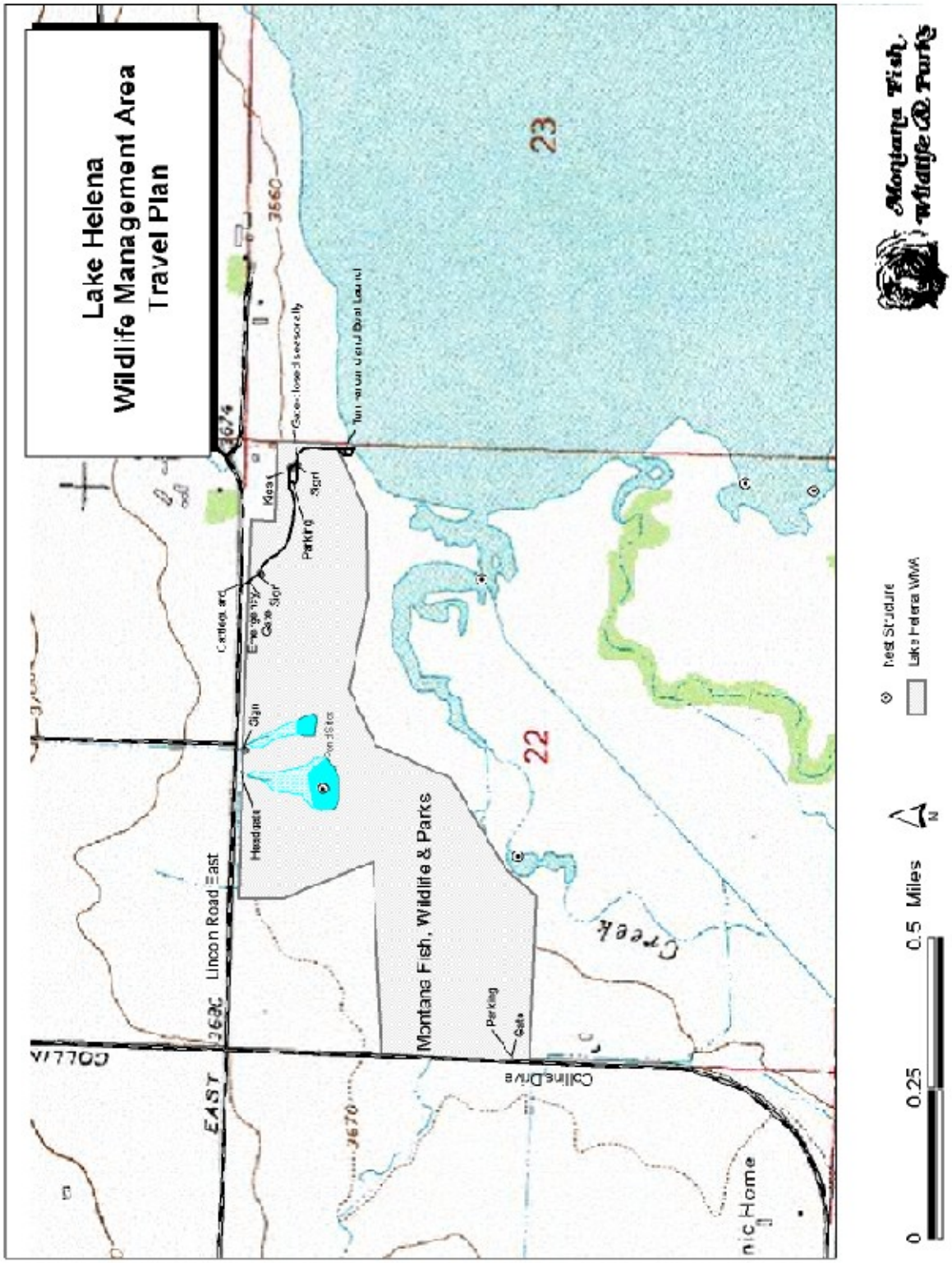
Over the years, public access to the lake became increasingly restricted. By the 1980's, Wesley and Delores Johnson were the only private landowners bordering the lake to allow public access for sporting purposes, although they annually closed this access on December 1. A road easement across the Johnson property and from the Helena Valley Irrigation District was secured in 1989 to provide access to the lake. When the Johnson property came up for sale, the recently enacted Montana Duck Stamp program provided the means to ensure perpetual public access to the lake and a small portion of the adjacent shoreline.

The Montana Department of Fish, Wildlife, and Parks received State Land Board sanction to acquire 157 acres of the Johnson's marsh and upland acreage along the northwest corner of Lake Helena in September 1988 (Purchase Agreement, Appx. E). The acquisition closed on November 17, 1988. The property was purchased at $700 per acre for a total investment of approximately $110,000 (Warranty Deed, Appx. E).

No actual lake frontage exists within the WMA.

Lake Helena is part of the Missouri River system upon which certain hydroelectric facilities occur that are owned and operated by PP&LM. Operation of these facilities is defined under FERC License #2188 (Appx E). The management of Lake Helena as a part of the Missouri River hydroelectric system has evolved from ownership and operation by the Montana Power Company to PP&LM. This transfer was completed in 2000. As previously noted, PP&LM has issued a 5 year lease to MFWP for use of lands below the high water mark.

Figure 2. Structures and Facilities on and near the Lake Helena Wildlife Management Area



APPENDIX B: PHYSICAL DESCRIPTION

Legal Description

The Lake Helena WMA occurs in portions of the north half of Section 22, Township 11 North, Ranger 3 West (Fig. 2). The legal description of the property is provided in the Warrant Deed dated November 17, 1988 (Appx E.)

Location and Topography

Lake Helena occurs in the northeast corner of the Helena Valley, Lewis and Clark County, less than 10 miles from Helena. Lake Helena flows into Hauser Lake on the Missouri River, via the 2.5 mile Causeway Arm. The Wildlife Management Area borders the high water mark along the northwest corner of the lake, and is bounded by Lincoln Road East on the north and Collins Drive on the west (Fig. 2).

Lake Helena is actually a backwater reservoir for Hauser Lake, an impoundment of the Missouri River. A variety of irrigation ditches, as well as Prickly Pear-Tenmile Creek and Silver Creek enter Lake Helena along its western border.

Lake Helena itself is approximately 2,100 acres in size. The water level of the lake is 3,650 feet. The lake depth averages 5 feet, with a maximum depth of 10 feet. Montana Power purchased all lands below the 3,660 foot contour when Hauser Dam was developed. (A Montana Power Co. survey set the benchmark at Hauser Dam 15.35 feet below the USGS topographic maps (3,638 feet), thus all descriptions of elevations referred to in documents by MPC or PP&LM must be adjusted by adding 15.35 feet.)

Lake Helena occurs in the lowest part of the Helena Valley, and drains into Hauser Lake via the Causeway Arm. On the north, the elevation grade rises about 600 feet to the summit of the North Hills. To the south, the Valley slopes gently upward, with the Helena airport located at 3,894 feet.

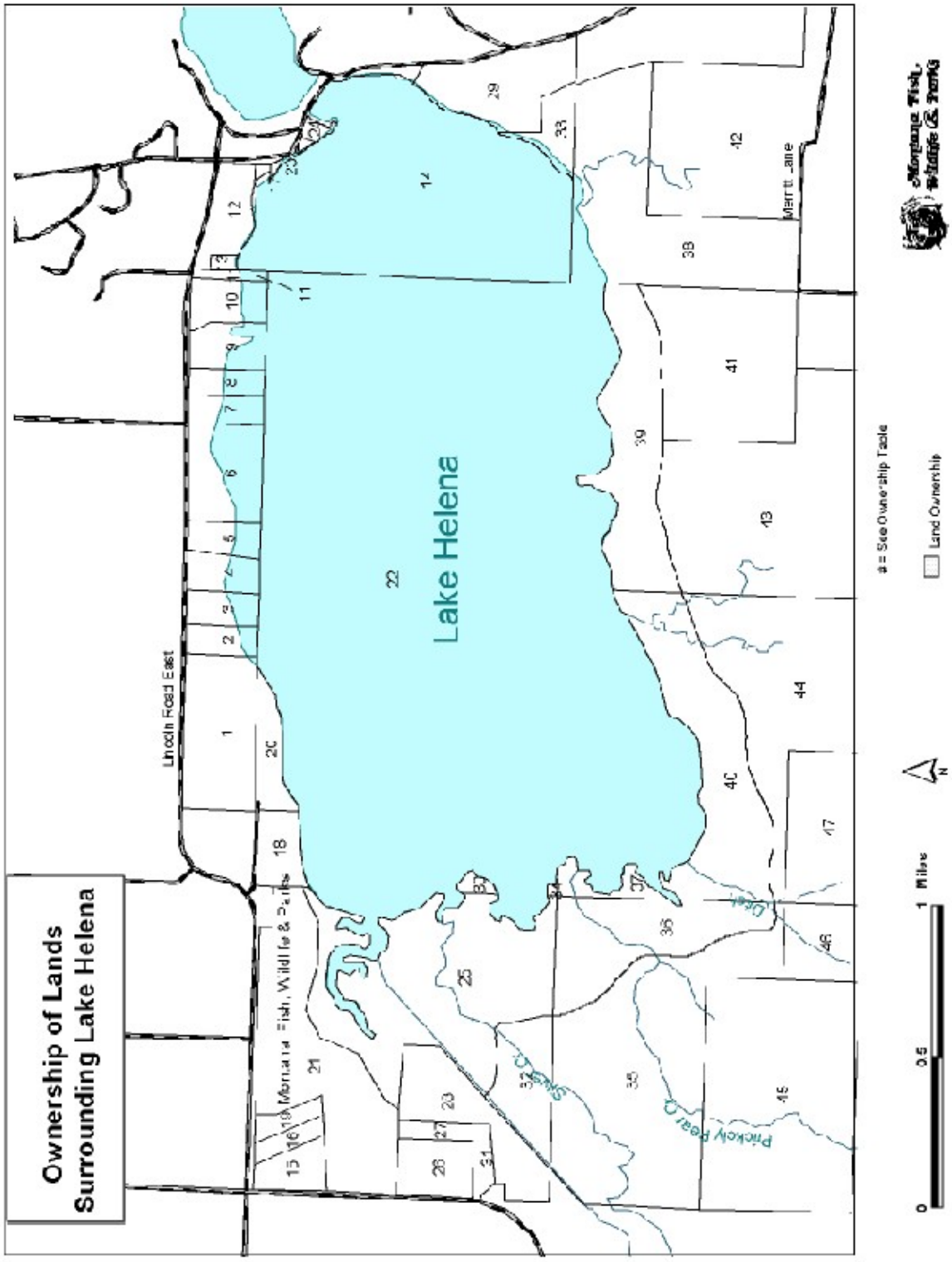
Surface and Mineral Ownership

The WMA is composed of 157.06 acres fee title lands owned and managed by the Montana Department of Fish, Wildlife and Parks, in a portion of Section 22, Township 11 North, Range 3 West, P.M.M. All surrounding lands are in private ownership, while the floodage zone below the high water mark is controlled by PP&LM (Fig. 11). All mineral rights associated with the WMA were conveyed with surface ownership. Except for the WMA, Lake Helena is entirely surrounded by private lands (Fig. 3)

Water

A water right application was filed by MFWP with MDNRC (January 6, 1995) but the Bureau of Reclamation objected, and MFWP withdrew their water right claim. However, a substantial portion of the HVID waste water returns to the Missouri River through Lake Helena, via the Lake Helena WMA. The Missouri River basin is closed to further water appropriation.

Figure 3. Ownership of Lands Surrounding Lake Helena.



OWNERSHIP OF LANDS SURROUNDING LAKE HELENA
(See Map of Land Ownership)

REC. #	GENERAL DESCRIP	OWNR_NAME	SHT_LEG_DS	MAIL	PROPTYPE	TOT_ ACRES	RES/ COM	TRS
1	Private	SMITH SAM JR	SW4SE4, SE4SW4, STRIP 28 1/2 F	MT	farmstead rural	76.850	R	T11NR3WS14
2	Private	ROLAND LEO D & MARGARET A	VULK MINOR SUBD LT 1 PER COS #	MT	vacant land rural	0.000	R	T11NR3WS14
3	Private	MANN ARTHUR D & ANN M	VULK MINOR SUBD LT 2 PER COS #	MT	vacant land rural	0.000	R	T11NR3WS14
4	Private	ROSS GERALD G & COLEEN J (JT/R	SWSW SEC 13 SESE SEC 14 VULK M	MT	residential rural	0.000	R	T11NR3WS13
5	Private	MCMORRAN STEVEN K	VULK MINOR SUBD LT 4 PER COS #	MT	agricultural rural	0.000	R	T11NR3WS13
6	Private	GABLE ESTATES LLC	VULK MINOR SUBD LT 5 COS #584	MT	agricultural rural	51.190	R	T11NR3WS13
7	Private	BAUSCH DAVID & JOY (JT)	KELLY MINOR SUBD TR B1 COS #62	MT	residential rural	0.000	R	T11NR3WS13
8	Private	GOLDSWORTHY ALAN & CARYL	KELLY MINOR SUBD TR B2 COS #62	IL	vacant land rural	0.000	R	T11NR3WS13
9	Private	KELLY KEVIN T & VULK-KELLY SAR	KELLY MINOR SUB TR B3 COS #626	MT	residential rural	24.170	R	T11NR3WS13
10	Private	GABLE ESTATES LLC	IN SESE TRACT C COS 573747/F	MT	farmstead rural	23.370	R	T0 R0 S0
11	Private	USA	W 165 FT OF SESE	DC	exempt property		C	T11NR3WS13
12	Private	CROSS KENNETH R	CROSS NO 2 MINOR SUBD LT 1 COS	MT	farmstead rural	28.490	R	T11NR2WS18
13	Private	THOMAS MICHAEL G & BARBARA E (	IN SWSW LT 3 COS #550072/F	MT	residential rural	0.000	R	T11NR2WS18
14	Water							
15	Private	WILLIAMS ROBERT L & VALERIE J	TR IN NWNW C/S 423602/E	MT	residential rural	20.620	R	T11NR3WS22
16	Private	BRAMBLETT TIM L & JANET M TRUS	TR IN N2NW 10AC	MT	residential rural	0.000	R	T11NR3WS22
17	Private	HOY DWIGHT & CHERI	CROSS NO 2 MINOR SUBD LT 2 COS	MT	residential rural	0.000	R	T11NR2WS18
18	Private	BRIESE BETTY A	NWNW LESS 1.1 & OTHER TRS	MT	residential rural	31.000	R	T11NR3WS23
19	Private	LUNDMAN MARVIN G & LELA L	10.59 AC IN NW4	MT	residential rural	0.000	R	T11NR3WS22
20	Private	SMITH SAM JR	NENW N2NWNE	MT	agricultural rural	24.180	R	T11NR3WS23
21	MT State	MONTANA DEPT OF FISH WILDLIFE	PT NE4, PT NW4 COS #437214/E	MT	agricultural rural	156.979	R	T11NR3WS22
22	Water							
23	Private	LEWIS & CLARK COUNTY	TR IN NW4NE4NW4	MT	vacant land rural	0.000	R	T11NR2WS19
24	Private	MCKAY WARD J & CAROL	E2NENW + W2NWNE	MT	residential rural	0.000	R	T11NR2WS19
25	Utl Ease							
26	Private	SCANLON JOSEPH D & CARTER LONA	MORTGAGE TRACT COS #538976/M I	MT	residential rural	30.000	R	T11NR3WS22
27	Private	SCANLON JOSEPH D & CARTER LONA	TRACT IN NWSW C/S 453084/E(LES	MT	vacant land rural	9.640	R	T11NR3WS22
28	Private	CAWLFIELD GEORGE & JANET	TR IN SW4	MT	agricultural rural	63.700	R	T11NR3WS22
29	Private	CHRISTISON JERRY L & GENEVIEVE	PT NWSE, NESE, S2SE W OF CO RD	MT	farmstead rural	69.400	R	T11NR2WS19
30	Utl Ease							
31	Private	BAYLESS STEPHEN R & JUDITH L	TR IN SW 9.48 AC C/S 438732/T	MT	vacant land rural	0.000	R	T11NR3WS22
32	Private	RUNNING W CATTLE CO	S DRAIN #2 PT S2SW4 PT E2SW4SW	MT	agricultural rural	77.200	R	T11NR3WS22
33	Private	DIEHL RANCH CO INC	PT SESW & PT SWSE	MT	agricultural rural	19.110	R	T11NR2WS19
34	Utl Ease							
35	Private	RUNNING W CATTLE CO	NESE ALL N2 NOT FLOODED LESS 4	MT	agricultural rural	262.920	R	T11NR3WS27
36	Utl Ease							
37	Utl Ease							
38	Private	DIEHL RANCH CO INC	PT W2NW, PT NWSW, NWNE LESS	MT	agricultural rural	177.030	R	T11NR2WS30
39	Utl Ease							
40	Utl Ease							
41	Private	DIEHL RANCH CO INC	PT S2NE, ALL N2SE	MT	agricultural rural	149.650	R	T11NR3WS25
42	Private	MERRITT JAY K & SHARON	TR A PER C/S #494352/E	MT	farmstead rural	187.731	R	T11NR2WS30
43	Private	RUNNING W CATTLE CO	SW SWSE PT NW NOT FLOODED	MT	agricultural rural	259.960	R	T11NR3WS25
44	Private	RUNNING W CATTLE CO	SE N2SW PT SENE NOT FLOODED	MT	farmstead rural	186.700	R	T11NR3WS26
45	Private	ANDERS FAMILY TRUST	SW; W2SE	MT	agricultural rural	245.360	R	T11NR3WS27
46	Private	WENGER CRAIG H	SESE	MT	agricultural rural	40.770	R	T11NR3WS27
47	Private	WENGER CRAIG H	S2SW	MT	agricultural rural	81.530	R	T11NR3WS26

Soils and Geology

The Helena Valley is a small intermontane basin. It is surrounded by rock formations ranging in age from pre-Cambrian to Cretaceous and is underlain by Tertiary "lake beds", which are mantled by younger alluvial fans in much of the valley. Folded and faulted Paleozoic limestone, shale, and quartzite beds, more than 5,000 feet in total thickness, are exposed in the mountains south of Helena. These sedimentary rocks have been metamorphosed by intrusion of the adjacent Boulder batholith. Folded pre-Cambrian sedimentary rocks form the other mountains that surround the area (Lorenz and Swenson 1951).

Four soil unit types occur on the WMA (U.S.D.A. Soil Conservation Service), including Amesha Variant Silt Loam of the upland pastures, Thess Loam in a small portion of moist upland in the extreme southwest portion of the WMA, Villy Silt Loam along Silver Creek, and the undefined Fluvaquents and Aquolls of the marsh.

Only the capabilities of the Amesha Variant Silt Loam of the uplands are described here:

Fluvaquents and aquolls (marsh portion of WMA) - 0-8% slopes soil profiles are extremely variable, and no particular kind of soil can be consistently identified and mapped separately. Soil profile textures range from gravelly loamy sand to clay loam. Due to their undefined nature, the capabilities of these soils cannot be described.

Amesha variant silt loam (uplands and pasture of WMA) - wet and saline, 0-2% slopes. Typically the surface layer is light brownish gray silt loam 7 inches thick. The underlying material is white silt loam and loam to 40 inches. Below this, to a depth of 60 inches is white fine sandy loam. The water table occurs at 24-48 inches. These soils have very severe limitations that reduce the choice of plants it will support and require careful management, or both. Soil is limited mainly because it is saline or alkaline and is usually somewhat poorly to poorly drained. Suited tree species include Russian-olive and Siberian elm. Suited shrubs include caragana, buffalo berry and skunkbrush sumac. Under irrigation these soils are also suited to cottonwood trees and lilac shrubs. Areas on the WMA typified by these soils are the only ones on which agricultural modification might occur, therefore their capabilities are more completely described.

Thess loam (southwest edge of WMA) - 0-2% slopes. Typically the soil profile indicates a surface layer of grayish brown loam 4 inches thick. The subsoil is very pale brown loam 11 inches thick. The substratum is light gray very gravelly sandy loam to 25 inches. Below this, to a depth of 60 inches, is light brownish gray extremely gravelly sand. This soil type is very limited.

Villy silt loam (Silver Creek slough area) - 0-2% slopes. In a typical profile of this Villy soil the surface layer is gray silt loam 9 inches thick. The subsurface layer is gray silt loam 19 inches thick. The underlying material is gray silt loam to 50 inches. Below this, to a depth of 60 inches, is light brownish gray loam.

Climate

The climate of the Helena Valley is characterized by low precipitation, a wide range in temperatures, and relatively low humidity. Throughout the winter months, chinook winds generally prevent persistent snow cover. The average annual precipitation recorded at the Helena airport over the 99 year period (1893-2002) was 11.96. Interestingly, the Helena airport statistic was 2.59 inches below the 65 year average for the period, 1884-1948, when the average annual precipitation was 12.61 inches (Lorenz and Swenson 1951). Prior to that, from 1881-1922, the Valley received 13.77 inches annually (Pardee 1925). Comparing the 100 year inteval 1893-1903 to 1992-2002, the precipitation has declined by about 2.2 inches. May and June are generally the wettest months in the Helena Valley.

The average high temperature generally occurs in July while the average low occurs in January. The average annual maximum temperature is 55.3 °F. Comparing the average temperature for the period 1893-1903 to the period 1992-2002 reveals a slight increase in temperature for the Helena area of 43.55°F compared to 44.32 °F. (http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?mthele).

HELENA WSO, MONTANA (244055)

Period of Record Monthly Climate Summary

Period of Record : 1/ 1/1893 to 12/31/2002

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	29.7	34.7	43.1	55.1	64.3	72.5	82.6	81.1	69.2	57.2	41.9	32.5	55.3
Average Min. Temperature (F)	11.2	15.2	22.2	31.8	40.3	47.6	53.4	51.7	42.4	33.3	22.4	14.6	32.2
Average Total Precipitation (in.)	0.61	0.47	0.72	0.96	1.91	2.11	1.14	0.99	1.11	0.73	0.61	0.59	11.96
Average Total SnowFall (in.)	8.9	7.2	8.6	5.3	1.7	0.1	0.0	0.1	1.2	3.2	6.8	8.2	51.3
Average Snow Depth (in.)	13	12	6	1	0	0	0	0	0	1	5	11	4

Percent of possible observations for period of record.
Max. Temp.: 99.9% Min. Temp.: 99.9% Precipitation: 99.5% Snowfall: 95.1%
Snow Depth: 95.3%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Vegetation Description

Cover Types

When the Lake Helena WMA property was purchased in 1988, approximately 26 acres of irrigated alfalfa cropland was fallow, while wetlands constituted approximately 50 acres, and alkaline soil pastureland amounted to 81 acres (Fig. 4). Creation of ponds has resulted in at least

4 additional acres of wetlands that were converted from pastureland and fallow cropland. The access road and parking areas have replaced approximately 0.9 acres of rangeland and 0.2 acres of wetland.

A partial list of vegetation species occurring on the WMA was compiled by Lloyd (2003) describing common species associated with wetlands and uplands, while aquatic species were described by Barton (2002).

PLANTS ASSOCIATED WITH WETLANDS (PONDS, LAKESHORE, DITCHES)

Scientific Name	*Common Name*	*Origin*
GRAMINOIDS		
Alopecurus aequalis	shortawn foxtail	Native
Alopecurus pratensis	meadow foxtail	Exotic
Carex aquatilis	water sedge	Native
Carex praegracilis	clustered field sedge	Native
Carex vesicaria	inflated sedge	Native
Eleocharis palustris	creeping spike-rush	Native
Juncus balticus	Baltic rush	Native
Scirpus pungens	three-square bulrush	Native
Scirpus validus	soft-stem bulrush	Native
Triglochin concinnum	graceful arrow-grass	Native
Triglochin maritimum	seaside arrow-grass	Native
FORBS		
*****Cirsium arvense*	Canada thistle	Exotic
Iva xanthifolia	marshelder	Native
Lemna minor	duckweed	Native
Nasturtium officinale	water cress	Exotic
Rumex salicifolius	willow dock	Native
Solanum dulcamara	bittersweet nightshade	Exotic
Typha latifolia	cattail	Native
Urtica dioica	stinging nettle	Native
Veronica anagallis-aquatica	water speedwell	Exotic

PLANTS ASSOCIATED WITH DRIER HABITATS

Scientific Name	Common Name	Origin
GRAMINOIDES		
Agropyron cristatum	crested wheatgrass	Exotic
Agrostis stolonifera	redtop	Exotic
Bromus inermis	smooth brome	Exotic
Distichlis stricta	saltgrass	Native
Elymus cinereus	Great Basin wild rye	Native
Elymus elymoides (*Sitanion hystrix*)	bottlebrush squirreltail	Native
Elymus junceus	Russian wild rye	Exotic

Elymus smithii (*Agropyron smithii*)	Western wheatgrass	Native
Elymus sp.		
Festuca idahoensis	Idaho fescue	Native
Festuca scabrella	rough fescue	Native
Hordeum jubatum	foxtail barley	Native
Phalaris arundinacea	reed canarygrass	Exotic
Phleum pratense	Timothy	Exotic
Poa palustris	fowl bluegrass	Exotic
Polypogon monspeliensis	rabbitfoot polypogon	Exotic
Puccinellia nuttalliana	Nuttall's alkaligrass	Native
Stipa viridula	green needlegrass	Native
FORBS		
Artiplex hortensis	garden orache	Exotic
Asparagus officinalis	asparagus	Exotic
Astragalus bisulcatus	two-grooved milkvetch	Native
Astragalus flexuosus	wiry milkvetch	Native
Camelina microcarpa	small seed falseflax	Exotic
***Cardaria draba*	whitetop	Exotic
Carduus nutans	musk thistle	Exotic
***Centaurea diffusa*	diffuse knapweed	Exotic
Cleome serrulata	Rocky Mt. bee plant	Native
Crepis runcinata	meadow hawksbeard	Native
Descurainia sophia	flixweed	Exotic
Glaux maritima	saltwort	Native
Iva axillaris	poverty-weed	Native
Kochia scoparia	kochia	Exotic
Lactuca serriola	prickly lettuce	Exotic
***Lepidium latifolium*	perennial pepperweed	Exotic
Linum lewisii	Lewis's blue flax	Native
Medicago sativa	alfalfa	Exotic
Melilotus officinalis	yellow sweetclover	Exotic
Oenothera villosa	common evening primrose	Native
Plantago eriopoda	alkali plantain	Native
Potentilla anserina	common silverweed	Native
Ranunculus cymbalaria	shore buttercup	Native
Rumex crispus	curly dock	Exotic
Salsola iberica	Russian thistle	Exotic
Sisymbrium altissimum	Jim Hill mustard	Exotic
Sisymbrium loeselii	Loesel tumblemustard	Exotic
Sonchus uliginosus	marsh sow-thistle	Exotic
Taraxacum officinale	dandelion	Exotic
Thlaspi arvense	field pennycress	Exotic
Tragopogon dubuis	salsify	Exotic

SHRUBS		
Artemisia cana	silver sagebrush	Native
Artemisia frigida	fringed sagewort	Native
Chrysothamnus nauseosus	rubber rabbitbrush	Native
Ribes aureum	golden currant	Native
Rosa sp.	wild rose	Native
Sarcobatus vermiculatus	greasewood	Native
Tetradymia canescens	spineless horsebrush	Native
TREES		
Elaeagnus angustifolia	Russian olive	Exotic
AQUATICS		
Potamogeton crispus		
Potamogeton pectinatus		
Potamogeton pectinatus		
Potamogeton pectinatus		
Potamogeton richardsonii		
Potamogeton crispus		
Lemna minor		
Nasturtium officinale		
Zannichellia palustris		
Potamogeton richardsonii		
Potamogeton crispus		
Potamogeton pectinatus		
Potamogeton filiformis		
Elodea canadensis		

***** Montana Noxious Weed
Nomenclature follows *Vascular Plant of Montana* (Dorn 1984).

Lloyd (Appx. E) provides recommendations regarding the four species of noxious weeds occurring on the WMA, and offers the following:

> There are four Montana noxious weeds present in the WMA. They are: whitetop, perennial pepperweed, Canada thistle, and diffuse knapweed. These four species are very aggressive and occupy considerable area within the WMA, reducing plant diversity, available forage, and native habitat for wildlife species. It must also be noted that marsh sow-thistle and kochia, although not listed as a noxious weeds in Montana, are very aggressive within the WMA and are occupying large areas of land that could provide a more native habitat. Weed treatment efforts should focus on the four species listed as noxious and consideration should be given to controlling marsh sow-thistle and kochia.

It is suggested that a specific plan for controlling each weed species be developed. Although a spray effort has been initiated for whitetop and other weed species, control has not been achieved. It would be advantageous to monitor the timing and control methods used to ensure that the appropriate method is employed and the weed plan is followed. Although weed control, especially spraying, may conflict with wildlife goals in the WMA, it is important to considerer that without control of these four invasive plant species, management goals for the WMA may not be achievable or sustainable in the long-term. Some information on plant biology and control methods is supplied below for each weed listed as noxious by the State of Montana [Appx E]. This information should be helpful in the development of a weed plan for these noxious species. Attached in hard copy are abstracts on whitetop, perennial pepperweed, Canada thistle and diffuse knapweed that provide additional information and suggestions on control methods. The abstracts are also available from the website: http://tncweeds.ucdavis.edu/esadocs

In addition to controls designed for specific species, weed management on the WMA will follow guidelines provided in the Region 3 Noxious Weed Management Plan. Four classes of weeds are identified. Class 1 species constitute a threat to properties and will be prevented. No species within this class currently occur on or near the Lake Helena WMA. Class 2 species will be prevented/eradicated as they occur. In this class, perennial pepperweed *(Lepidium latifolium)* and whitetop *(Cardaria draba)* occur. Class 3 species will be reduced/contained. In this class, two species occur: diffuse knapweed *(Centaurea diffusa)* and spotted knapweed *(Centaurea maculosa).* Class 4 species are in the lowest control priority class, and will be reduced when in association with Class 3 species, otherwise they will be tolerated. In this category, Canada thistle *(Cirsium arvense)* occurs on the WMA. Diffuse knapweed is the most abundant weed and occurs along the county roadsides and has invaded the WMA along old roadways, water courses, and has spread to other portions of the property.

Figure 4. Vegetation map of the Lake Helena Wildlife Management Area and Surrounding Lands When Purchased in 1988.

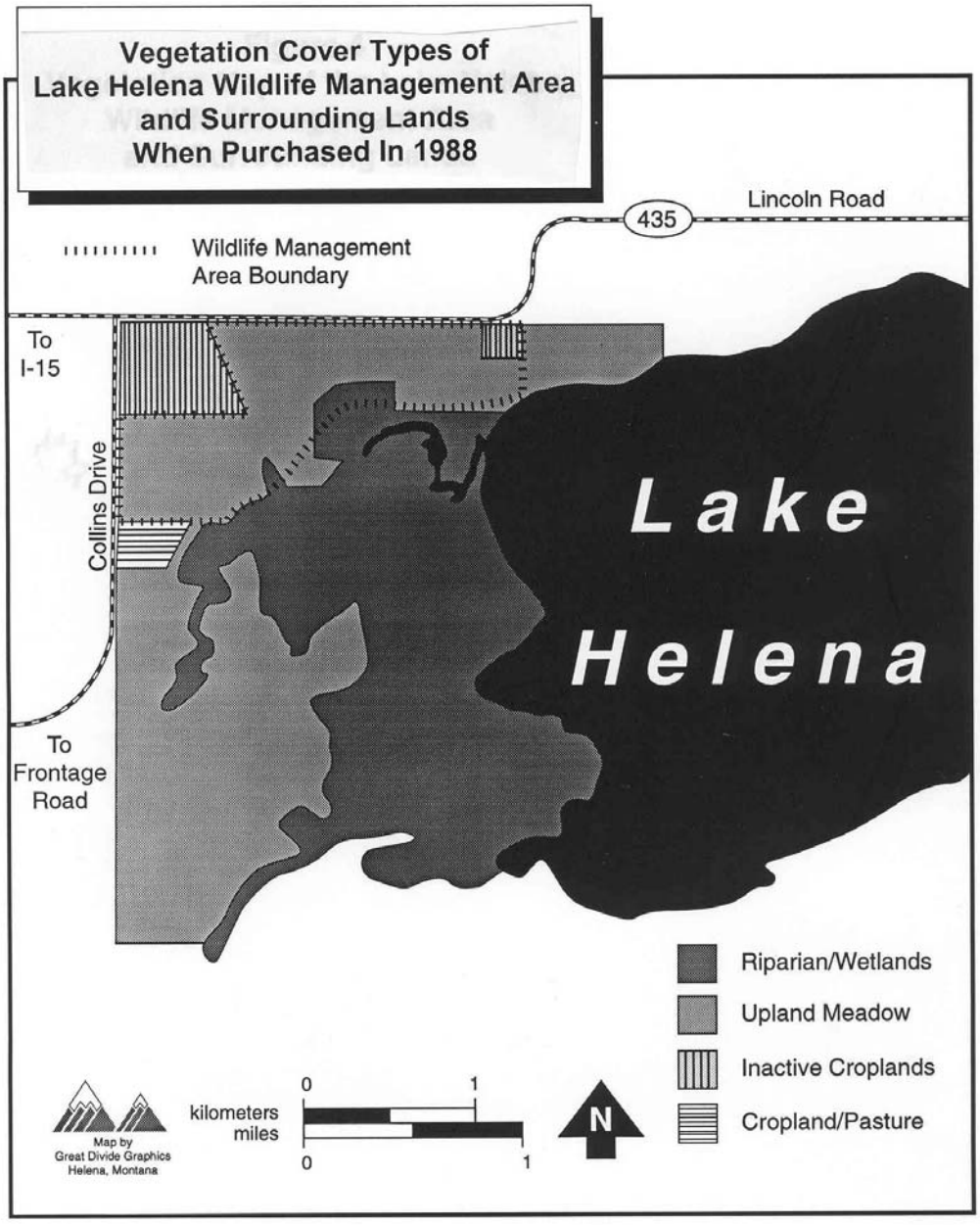


Photo Plots

Three photo plots of representative vegetation types, identified by two metal fence posts at each site, one approximately one meter high, and the other approximately 0.5 meter high, were established in 1990, and are monitored prior to the waterfowl nesting season in March, and at the peak of maximum brood rearing in June (Figs. 5, 6, 7), to quantify changes in upland nesting cover. In 1993, the eastern site was moved slightly to accommodate the newly constructed access road. Photos of the areas surrounding the ponds will continue to be collected to document vegetation response to the presence of the ponds. Photos are on file at HARO and are catalogued on a CD. Legal descriptions of each photo plot are as follows:

> Plot X = SW plot along Collins Drive. Enter through barbed wire gate at south edge of property along Collins Drive. Follow fenceline approximately 107 meters (351') in an easterly direction, then approximately 50 meters (165') in a northerly direction (350°, declination = 0). UTM location (NAD 27) is Zone 12, north 0425299, west 5172034.
>
> Plot Y = North plot along Lincoln Road. Enter through barbed wire gate next to Lincoln Road irrigation ditch headgate. Cross the ditch at the headgate. Plot location is as follows: from the headgate travel westerly along the irrigation ditch approximately 94 meters (308'), then travel approximately 34 meters (112') in a southerly direction (170°, declination = 0). UTM location (NAD 27) is Zone 12, north 0425904, west 5172720.
>
> Plot Z = NE plot along Lincoln Road. Enter at Lincoln Road access site. Plot location is as follows: from western post of cattle guard at entry, approximately 98 meters (322') in a southerly direction (180°, compass declination = 0) at UTM (NAD 27) zone 12, north 0426425, west 5172671. A NEW site established March 22, 1993. Old site was approximately 50 meters southeast, near the first curve in the access road.

The following format is used in the coding of digital photos:

LHXnlommddyy = LH (Lake Helena)
X (southwest plot off Collins Drive)
n (cardinal direction photo was taken - north)
lo (low - photo taken from the top of the taller fence post)
mmddyy (041601 = April 16, 2001)

Two fence posts occur at each photo plot. The taller one is approximately 30 inches tall while the lower one is about 24 inches tall. The taller one is the center of the photo plot. The shorter post is set approximately 6 feet from the tall post and is placed at one of the 4 cardinal direction photos to provide a measure of vegetation growth, i.e. how much of the post is obscured by vegetation. Two sets of photos are taken at each plot: a "lo" set taken from the top of the higher fence post, and a "hi" set taken from a standing position, to reveal landscape features and vegetation growth.

Photos are being taken during late winter/early spring before growth of vegetation and mid to late summer at maximum vegetation growth. Alternate year photo quantification has been adopted.

General photos (not photo plots) of the Lake Helena WMA are filed in the HARO wildlife biologist's computer under c:\mydocuments\wma\photo file, while photoplot photos are in c:\mydocuments\wma\photoplot file.

Livestock grazing on the WMA occurred under the authority of a 3-year grazing lease that extended from November 17, 1988, through August 30, 1991, as a condition of the original sale (Appx. E). Grazing has not occurred on the WMA since a range evaluation (by statewide range specialist Mike Frisina, April 1992) determined that vegetation and soil recovery is necessary. Upland nesting cover has dramatically improved (photo plots) since cattle were removed from the area.

Figure 5. **Photo Plot X: shrub community - west portion of WMA, off Collins Drive (North, East, South, West).**

Figure 6. Photo Plot Y: grassland community - lowland swale in pasture, north central portion of WMA near ponds, off Lincoln Road (North, East, South, West).

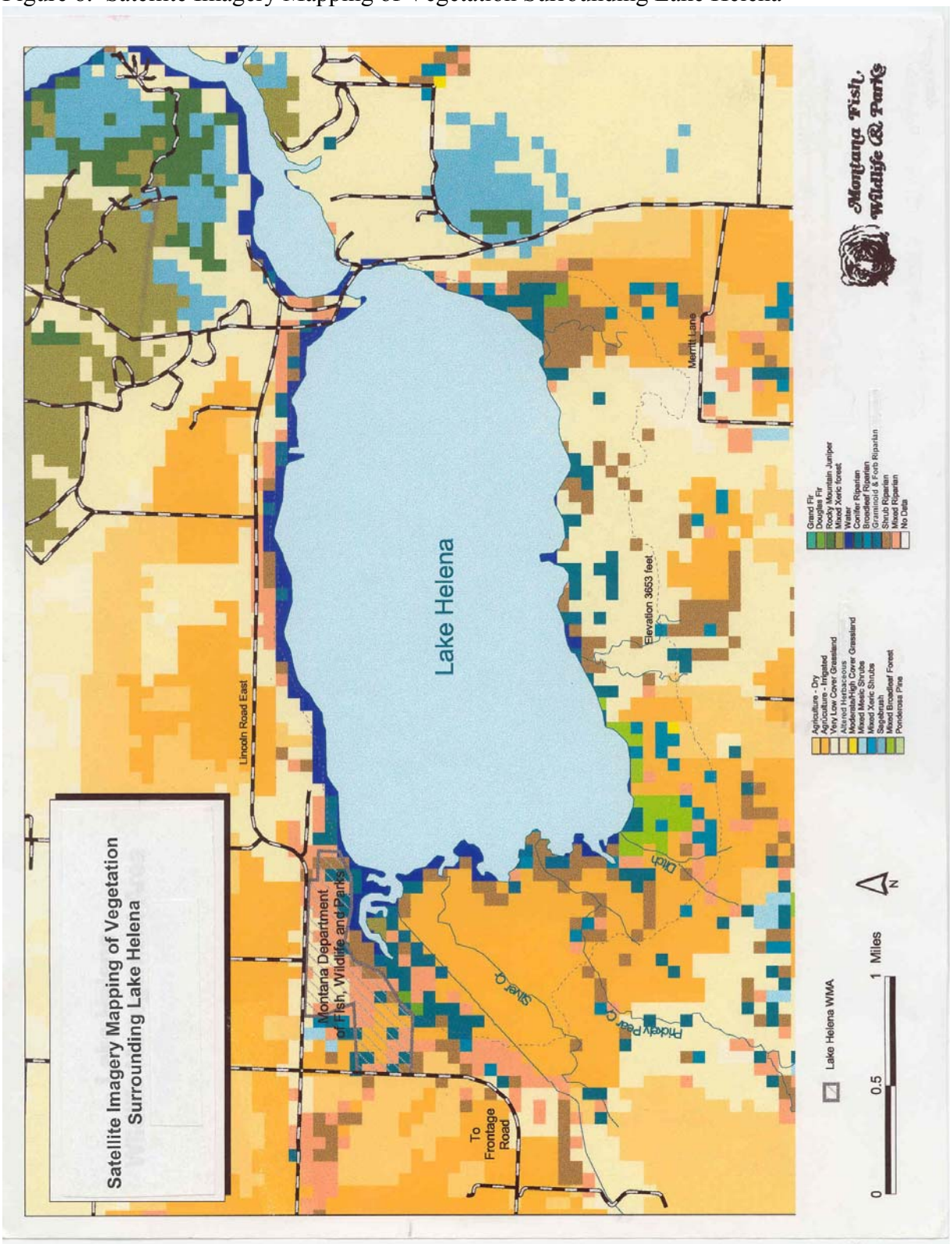
Figure 7. Photo Plot Z: grassland community - pasture, northeast portion of WMA, off Lincoln Road (North, East, South, West).

Existing Vegetation and Ground Cover, Based on GAP: Landsat Imagery

Upland cover types mapped to a 90 m^2 (0.8 ha) minimum map unit, were taken from the Montana GAP Analysis project (Redmond et al. 1998) (Fig. 8). The term "GAP" refers to the gaps in national, regional, and state information relative to vegetation and vertebrate distribution. The Montana GAP project has compiled and analyzed vegetation and vertebrate data at the statewide level to identify areas within the state where biodiversity may be at risk as a result of human influence.

Redmond et al. (1998) provides caveats regarding the type of use and scale to which GAP information can be reliably applied. Although the Lake Helena WMA occurs at a much smaller scale than is recommended for analysis of information (100,000 acres), descriptions of existing vegetation and land cover surrounding the lake at a gross level is appropriate. The minimal map unit used in the GAP project is a pixel size of 90 m^2, therefore potentially important habitat microsites such as ponds, marshes, and narrow riparian zones may not be represented. Although these types are extremely important landscape components for wildlife, the more expansive categories of ground cover are described in the standard format as presented in Fisher et al. (1998). Five cover types appear on the landsat map (Fig. 8) of the WMA, including: Mixed Riparian, Graminoid & Forb Riparian, Altered Herbaceous, Shrub Riparian, and Irrigated Agriculture that has now reverted to Mixed and Graminoid & Forb Riparian.

Figure 8. Satellite Imagery Mapping of Vegetation Surrounding Lake Helena



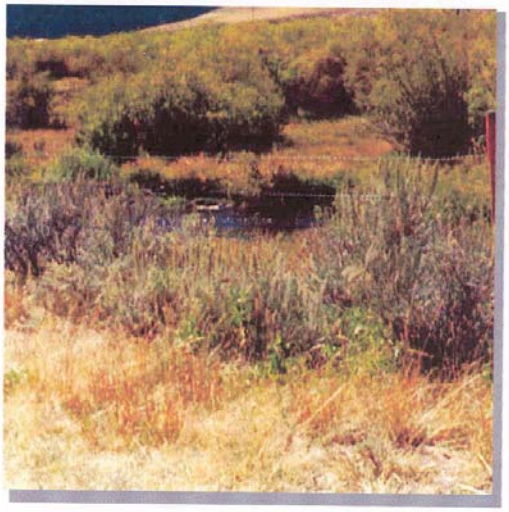
MIXED RIPARIAN

Montana Land Cover Atlas

6400 Mixed Riparian

DOMINANT SPECIES

Grass species (*see 6200 code species*)
Shrub species (*see 6300 code species*)



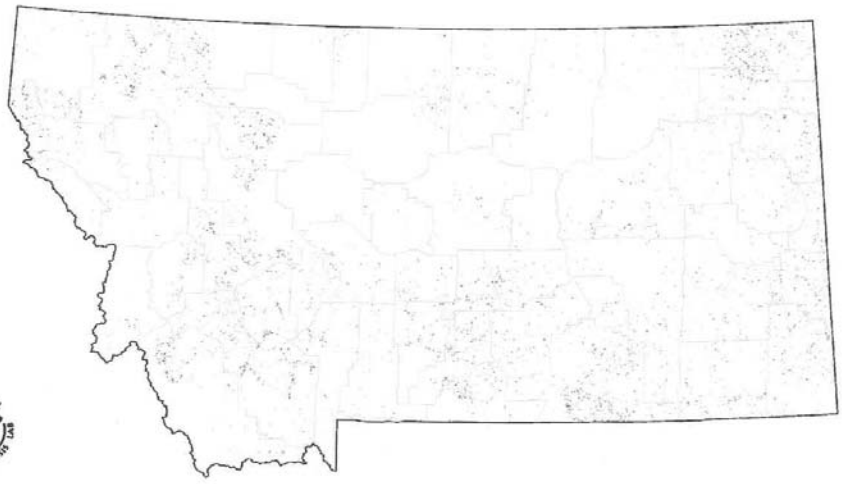
DESCRIPTION

Riparian areas dominated by a mix of shrub and herbaceous species, with codominance of shrub and grass species present. Tree cover is less than 15%.

TOTAL AREA	ELEVATION
122,662 hectares	552 - 3195 m range
88,540 patches	1209 m mean
0.32 % of state	

STATE RANGE

Occurs in riparian areas across the state.



41

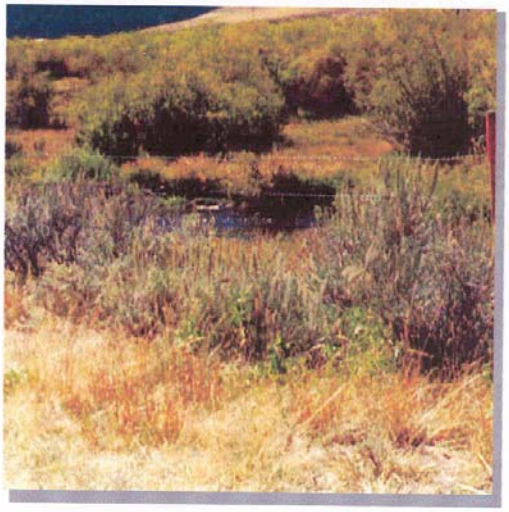
GRAMINOID & FORB RIPARIAN

Montana Land Cover Atlas

6400 Mixed Riparian

DOMINANT SPECIES

Grass species (*see 6200 code species*)
Shrub species (*see 6300 code species*)



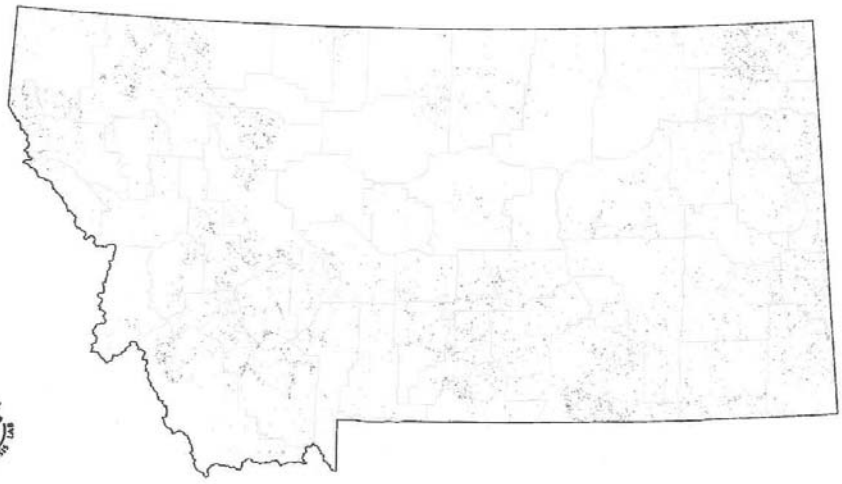
DESCRIPTION

Riparian areas dominated by a mix of shrub and herbaceous species, with codominance of shrub and grass species present. Tree cover is less than 15%.

TOTAL AREA	ELEVATION
122,662 hectares	552 - 3195 m range
88,540 patches	1209 m mean
0.32 % of state	

STATE RANGE

Occurs in riparian areas across the state.



41

ALTERED HERBACEOUS

Montana Land Cover Atlas

3110 Altered Herbaceous

DOMINANT SPECIES

Bull Thistle *(Cirsium vulgare)*
Canada Thistle *(Cirsium arvense)*
Cheat Grass *(Bromus tectorum)*
Common Dandelion *(Taraxacum officinaie)*
Crested Wheatgrass *(Agropyron cristatum)*
Japanese Brome *(Bromus japonicus)*
Leafy Spurge *(Euphorbia esula)*
Smooth Brome *(Bromus inermis)*
Spotted Knapweed *(Centaurea maculosa)*
St. John's-wort *(Hypericum performatum)*
Western Ragweed *(Ambrosia spp)*
Yellow Sweet-clover *(Melilotus officinatis)*

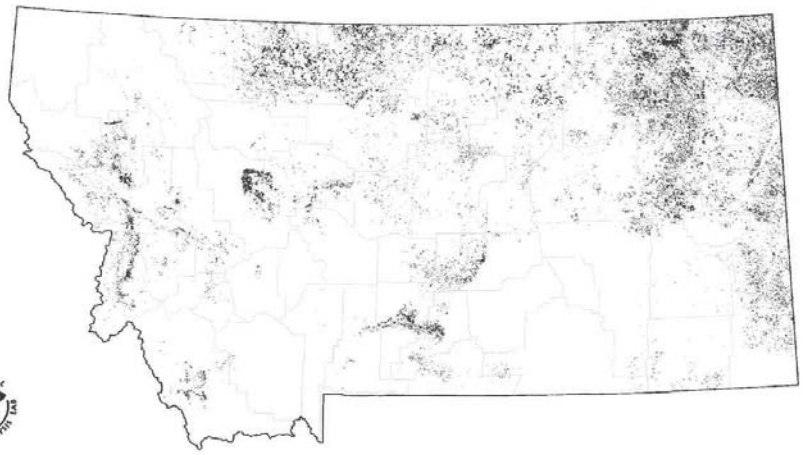
DESCRIPTION

Grasslands with 30% or more cover from the dominant species list. Total herbaceous cover ranges from 20-80%. Typically associated with disturbed lands and can have bare soil coverages from 10-50%. Includes CRP lands in central and eastern Montana..

TOTAL AREA	ELEVATION
1,014,946 hectares	532 - 2862 m range
109,396 patches	934 m mean
2.67 % of state	

STATE RANGE

Occurs across the state in low and high elevation areas. Usually found in smaller regions of 2-10 ha.



4

SHRUB RIPARIAN

Montana Land Cover Atlas

6300 Shrub Riparian

DOMINANT SPECIES

Alder *(Alnus spp)*
Black Hawthorn *(Crataegus douglasii)*
Bog Birch *(Betula glandulosa)*
Currant *(Ribes spp)*
Red-osier Dogwood *(Corus stolonifera)*
Rose *(Rosa spp)*
Shrubby Cinquefoil *(Potentilla fruticosa)*
Snowberry *(Symphorcarpos spp)*
Thimbleberry *(Rubus parviflorum)*
Twin-berry *(Lonicera involucrata)*
Utah Honeysuckle *(Lonicera spp)*
Water Birch *(Betula occidentalis)*
Willows *(Salix spp)*

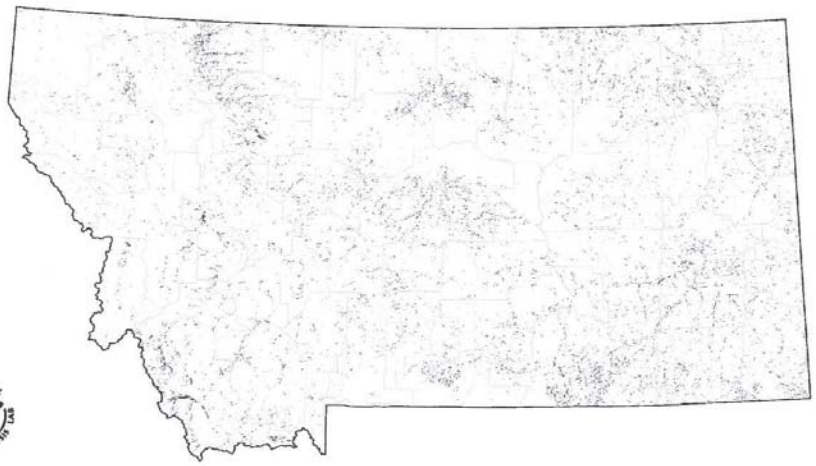
DESCRIPTION

Riparian areas dominated by shrubs, with total shrub cover from 20-100%. Tree cover is less than 15% and shrubs dominate over the herbaceous species. Standing water may be present in the riparian area (willow marshes).

TOTAL AREA	ELEVATION
363,596 hectares	549 - 3016 m range
200,240 patches	1179 m mean
0.95 % of state	

STATE RANGE

Occurs in riparian areas across the state.



40

Structures and Facilities

Fences

Approximately 2 miles of boundary fence and less than ½ mile of interior fence were present when the WMA was purchased. The interior barbed wire fence has been removed. The external boundary fence with marker signs has been maintained or upgraded on the north, west and south boundaries. A boundary fence was reconstructed along the southern boundary of the WMA in 1993. This fence was placed on the actual surveyed boundary, and thus reclaimed several feet of lands that had been fenced in by an adjacent landowner. The eastern portion of this fence crosses marsh lands and required special "floating jack-leg" construction. A pole fence was constructed in August 1999 along the entire length of the access road from Lincoln Road East to the shoreline to control off-road driving. A "drift" fence is set up annually along the east shore of the WMA that extends out into the lake approximately 40 feet to deter neighboring cattle from gaining access to the WMA via the lake.

Signs

A department wildlife management area sign is posted at the north entrance to the property. An educational/interpretation sign was installed in the kiosk at the parking lot off Lincoln Road East. A sign describing motorized access to the lake is posted at the parking lot gate. A sign acknowledging cooperators in the Lake Helena Wetlands Enhancement Project occurs near the irrigation canal headgate just off Lincoln Road East. A No Parking sign is located at the turn-around area near the lake shore. Boundary marker signs will be maintained on all exterior fences.

Roads, Parking Area, Boat Launch, Kiosk

In 1992, a new entrance road was constructed about 300 yards west of the Bureau of Reclamation ditch, and turns east to a parking facility and metal gate, then merges with the old ditch road and travels south to near the edge of the lake where a turn-around area allows for unloading and hand launching of small boats (Fig. 2). A cattleguard was installed on the access road off of the Lincoln Road entrance. A cabled concrete mat was installed along the lakeshore in 2000 to protect the shoreline and facilitate hand launching of boats. An informational kiosk was constructed in the parking lot in 1996 that contains a large map defining the WMA and the waterfowl rest area closure on the south portion of the lake and provides acquisition information about the WMA. A brochure rack holds wildlife related information in brochure format. A bulletin board with a protective plastic cover is on an inside wall for posting of notices and relevant information. A metal pipe gate between the parking area and the lake shore is seasonally closed and locked to minimize human disturbance to waterfowl and critical seasonal habitats.

Ponds, Ditches and Control Structures

The Helena Valley Irrigation District manipulates headgates on ditches within the WMA (Fig. 2). Overflow irrigation water returning to the Missouri River system is used to seasonally flood (April 15 to September 15) two ponds on the WMA that were constructed in 1993 (Appx E). Ponds are flooded in the spring to accommodate waterfowl nesting activity, then allowed to naturally draw down through the summer. Ponds may be reflooded in the fall prior to the ditches being turned off.

Waterfowl Rest Area

A waterfowl rest area (Fig. 10) was established in the south half of Lake Helena in 1985. This rest area is maintained annually by marking the north boundary in the lake with either red or orange buoys on the lake corners, and orange Carsonite posts or orange closure signs on the uplands. Annual migratory bird regulations provide the following language regarding Statewide Closures (includes south half of Lake Helena):

> By order of the Montana Fish, Wildlife & Parks Commission, the following described areas are closed to hunting, harassment or molesting of migratory waterfowl.

Waterfowl Nesting Structures

Eleven waterfowl nesting structures have been placed on or adjacent to the WMA (Fig. 2), including 1 pole nest for ducks, and four culvert nest for concurrent use by geese and ducks. The pole nest and the two culvert nests occur near the lake's edge, on PP&LM land, in southeast Section 22. A third culvert occurs in a small pond near the south boundary of the WMA in a small pond that occurs just below the high water mark on PP&LM lands. The fourth culvert is on the larger westerly pond constructed on the WMA. A fifth culvert occurs along the Interstate 15 frontage road and does not appear in Figure 2. Five fiberglass cylinders have also been located in the area; each accommodating a nesting pair of ducks. The pole structure is used by a single pair of ducks and consists of an inverted rubber tire, lined with dirt and small gravel, and covered with mesh wire, through which is woven straw and vegetation. The culverts are designed to accommodate 2 pairs of ducks and a pair of geese. The 6 foot long culvert stands on end in approximately 24 inches of mud and 16 inches of water. It extends approximately 40 inches above the water surface. The culvert is filled with gravel/dirt to within 8 to 4 inches of the rim, covered with topsoil, and seeded with grass. A wooden divider, nested inside the rim of the culvert divides the surface into three portions. The largest section (1/2 of the area) will be used by geese, while the remaining half is divided in half again and each portion is covered with mesh wire and the created cavities are lined with grass and will be used by ducks. Fiberglass tube nesting structures or platforms for nests have been placed by private landowners on surrounding lands.

In addition to waterfowl nest structures, a series of bluebird boxes (about 10) have been installed along the access road fence to the WMA.

APPENDIX C: WILDLIFE DATA

BIRDS

Waterfowl population trend information has generally been collected in a comparable fashion over several years. Canada goose breeding pair surveys and production surveys have been conducted since 1974, and mid-winter waterfowl surveys are on record since 1987. (T. Carlsen, pers. com.)

Mid-Winter Waterfowl Surveys

Mid-winter waterfowl surveys are conducted annually to obtain population trend estimates and distribution information. Lake Helena has historically been surveyed as part of Region 3 (even when it was briefly in Region 4 and Region 8—now defunct). The lake and associated irrigation ditches and canals provide wintering areas for significant numbers of mallards within Region 3. Original flight reports are in the Lake Helena file in the Helena Area Resource Office. The following is an example of the most recent survey conducted on the Missouri Headwaters (Tom Carlsen, pers. com.).

Waterfowl observed along Missouri Headwaters survey area, January 10, 2003.

SECTION		Mallard	Goldeneye	Merganser	Canada Goose	Coots
Missouri R.	Canyon Ferry Reservoir	1550	131	15	1620	0
	Hauser Reservoir	930	110	22	529	0
	Lake Helena	578	15	0	370	0
	Townsend Bridge to Deepdale	15	178	41	363	0
	Deepdale to Toston Bridge	105	230	0	57	0
	Toston Bridge to Toston Dam	0	422	0	0	0
	Toston Dam to Trident	0	45	0	12	0
Madison R.	Trident to I-90	0	10	0	0	0
	I-90 to Grey Cliffs	308	22	0	431	0
	Grey Cliffs to Bear Trap	35	20	0	0	0
Gallatin R.	West Fork (4 corners to confluence)	28	11	25	0	0
	East Fork (up to Cottonwood Creek)	721	266	111	250	0
	Gallatin River to Trident	199	356	0	35	0
	Manhattan Refuge	7791	0	0	1083	0
TOTAL		12,260	1,816	214	4750	0

Waterfowl and bald eagles observed along Missouri Headwaters survey area, 1987 – 2002.

YEAR	Mallard	Goldeneye	Merganser	Canada Goose	Coots	Bald Eagle
2003	12,260	1,816	214	4,750	0	25
2002	10,429	1,904	232	2,151	0	24
2001	9,284	1,570	797	584	0	27
2000	15,289	1,586	727	3,110	148	29
1999	17,377	3,003	276	2,358	175	35
1998	2,053	751	879	2,677	0	8
1997[a]	-	-	-	-	-	-
1996	10,449	955	559	3,096	5	43
1995	5,938	1,190	432	1,817	84	46
1994[a]	-	-	-	-	-	-
1993	2,349	1,210	513	1,135	0	31
1992	4,998	1,476	649	1,049	0	58
1991	10,890	1,601	382	748	0	50
1990[b]	8,013	1,224	104	613	0	-
1989	3,112	659	20	712	0	17
1988	4,007	1,153	163	619	0	50
1987	13,858	954	42	524	0	15

[a] – No flights conducted because of poor weather conditions.
[b] – Bald eagles were not counted.

Information specific to Lake Helena from Surveys conducted along the Missouri Headwaters

YEAR	Mallard	Goldeneye	Merganser	Canada Goose	Swan	Bald Eagle
2003	578	15	0	370	0	0
2002	1124	0	0	35	0	0
2001	1288	0	0	55	0	0
2000	192	0	0	165	0	0
1999	412	0	0	210	0	0
1998	0	0	0	0	0	0
1997[a]	0	0	0	0	0	0
1996	1746	0	0	75	0	0
1993[b]	15	0	0	2	0	0
1992[c]	909	5	1	0	0	0
1991[d]	2351	1	3	0	0	0
1990[e]	3640	1	0	0	3	0
1989	1225	0	0	0	0	1
1988	666	0	0	0	3	0
1987	1124	0	0	0	0	0

[a] – No flights conducted because of poor weather conditions.
[b] – Lake Helena and feeder creeks/canals were frozen; 3-6" of powder snow covered the ground.
[c] – Lake Helena was frozen but creeks and canals above the lake were open.
[d] – Over the entire Missouri River system survey (inclusive of Lake Helena), 68 coots, 3 green winged teal and 50 bald eagles were observed (26 immatures, 24 adults).
[e] – Bald eagles were not counted.

Canada Goose Production Surveys - involve aerial shoreline searches conducted near the end of June.

Canada goose production survey

Date	Observer	Adult	Juvenile	Non-breeders	Total
6-26-96	T. Carlsen	27	66	51	144
6-15-95	R. Northrup	77	67	50	194
6-14-94	R. Northrup	48	113	18	179
6-9-92	R. Northrup	20	19	132	171
6-91	R. Northrup	34	118	62	214
6-21-90	T. Carlsen	16	35	168	219
6-25-89	R. Pelo	32	80	24	136
7-6-88	R. Pelo	60	113	19	192
7-14-87	T. Carlsen	89	286	43	418
6-22-86	K. Grover	44	105	2	151
6-16-85	T. Carlsen	43	154	38	235
7-6-84	T. Carlsen	50	188	84	322
6-16-83	T. Carlsen	65	158	64	287
6-22-82	K. Alt	70	249	69	388
6-6-80	J. Herbert	30	129	77	236
6-29-78	G. Taylor	60	205	15	280
6-17-77	D. Childress	74	153	27	254
6-8-76	D. Childress	37	75	17	129
7-3-75	D. Childress	65	45	--	110
1990-96 Average	(6 years)	37.0	69.7	80.2	186.8
1985-89 Average	(5 years)	53.6	147.6	24.0	226.4
1980-84 Average	(4 years)	53.75	181.0	73.5	308.3
1973-79 Average	(6 years)	57.2	112.5	14.5	184.2
1973-89 Average	(15 years)	55.0	142.5	33.8	231.3

Breeding pair surveys for geese were conducted aerially the third week of April and provide a general population trend based on nesting efforts. The first nesting structures for Canada geese were installed (one pole and one culvert nest structure) in February 23, 1990. Within 2 months, a pair of geese and a pair of mallards inhabited the culvert nest. The pole nest was not used the first year. Both structures were utilized in 1991 and 1992. Additional structures were installed in 1993. A lack of personnel or volunteers has lead to sporadic maintenance and monitoring of nest structures. Effort will be made to recruit reliable assistance.

Canada goose breeding ground survey

Date	Observer	Pairs	Singles	Groups	Total
4-23-97	B. Stansberry	28	11	0	67
1996	no survey				
4-18-95	R. Northrup	18	13	21	70

4-19-94	R. Northrup	23	5	0	51	
4-15-93	R. Northrup	11	11	14	47	
4-21-92	R. Northrup	22	5	0	49	
4-30-91	R. Northrup	37	15	6	95	
1990	no survey					
4-21-89	R. Pelo	76	19	58	229	
4-27-88	T. Carlson	38	15	92	183	
4-21-87	S. Denson	52	30	8	142	
4-17-86	K. Grover	46	27	35	154	
4-22-85	T. Carlson	38	31	104	211	
4-13-83	T. Carlson	61	25	158	305	
4-21-82	J. Herbert	17	28	48	110	
4-23-81	J. Herbert	43	29	33	148	
4-25-80	J. Herbert	23	26	126	198	
4-28-79	D. Childress	21	9	69	120	
4-20-78	G. Taylor	22	22	98	164	
4-22-76	D. Childress	10	12	23	55	
4- 9-74	D. Childress	15	7	70	92	
4-20-61	--	40(?)			101	
1990-1997 Average		23.2	10	6.8	63.2	(6 years)
1985-1989 Average		50	24	98	184	(5 years)
1980-1984 Average		36	27	91	294	(4 years)
1974-1979 Average		17	13	65	107	(5 years)
1974-1989 Average		35.5	21.5	70.9	12.4	(13 years)

Mallard breeding pair survey - Lake Helena

A breeding pair survey for mallards was conducted May 21, 1989 for the lake Helena area, wherein 108 ducks were observed including 56 pairs and 14 in flocks. Classifications of single ducks and observed pairs are both considered to be paired ducks while flocks of ducks are non-breeding, unpaired individuals.

Waterfowl banding project - Lake Helena

Duck banding efforts on Lake Helena were initiated in 1992, peaked in 1993 and continued through 1995. This was part of an effort initiated in 1991 by Pacific Flyway biologists across the western United States and Canadian provinces. The five-year cooperative project was intended to gather information primarily on mallards, pintails, and other species of "dabbling" ducks from this large geographic area where historic banding information has been scarce. The effort concentrated on summer bandings, with the objective of marking samples of young and adult ducks from specific geographic units designated as banding reference areas.

Band recovery data from these ducks provides useful and interesting insights into the habits of waterfowl and waterfowl hunters in this broad geographic area, and helps define the effects of hunting regulations on various segments of the waterfowl population.

Lake Helena Waterfowl Banding Results

Year	Mallard	Pintail	Other ducks
1992	116		
1993	208	14	5 wood ducks, 4 teal, 1 ring-necked duck
1994	114		
1995	36		

In 1985 and 1986, Canada geese were banded at Lake Helena as part of a statewide effort to determine movements of geese. A recapture effort in 1987 at Lima Reservoir revealed 4 of 51 recaptures to have originated from Lake Helena, including 3 that were banded in 1985, 1 banded in 1986, including 3 females and 1 male.

Lake Helena Waterfowl Band Recoveries

Forty-eight bands were recovered by hunters (one recovered by a researcher investigating a botulism outbreak in Alberta) ranging from locations that include: Montana (18), Idaho (10), California (7), Washington (2), British Columbia (2), Utah (2), Alberta (1), Wyoming (1), Louisiana (1), Kansas (1), Colorado (1), Ohio (1), Texas (1). Half of the bands were recovered within 1 year of banding with twelve birds harvested the same year they were banded, and another 12 harvested two years after banding. The longest lived bird was a local that was banded on Lake Helena in July of 1992 and was taken on Lake Helena by a hunter 7 years later in January 1999.

Band Returns from Waterfowl Banded at Lake Helena, 1993-1995.

Band Returned	Location	Species	Hunter Name	Date Banded
10/02/93	Canyon Ferry, MT	Mallard	Bird	8/6/93
10/02/93	Lake Helena, MT	Mallard	Lewis	8/5/93
10/05/93	Lake Helena, MT	Mallard	Denver	8/13/93
10/05/93	Lake Helena, MT	Mallard	Netschert	8/8/93
10/23/93	Halfbreed NWR, MT	Canada Goose	Kennedy	6/26/85
10/30/93	NR Rexburg, ID	Mallard	Hix	8/8/92
11/10/93	Salt River, WY	Mallard	Hendrick	8/19/93
11/13/93	Snake River, ID	Mallard	Eden	8/16/93
11/15/93	NR Hagerman, ID	Mallard	Hale	8/7/92
11/16/93	NR Delta, CO	Mallard	Donnell	8/16/93
12/04/93	NR Salt Lake City, UT	Mallard	Elton	8/10/92
12/22/93	Mendota WA, CA	Mallard	Shoffner	8/4/93
05/09/94	Slocan River, BC	Unid. Teal	Cutler	8/4/93
05/09/94	Slocan River, BC	Unid. Teal	Cutler	8/4/93
09/07/94	Mosquito, OH	Canada Goose	Crane Cr WR	6/18/86
10/02/94	Lake Helena, MT	Mallard	Hauck	8/18/94
11/01/94	Helena, MT	Mallard	Kahn	8/6/93
11/15/94	Lake Helena, MT	Mallard	Campbell	8/19/93
11/19/94	Silver Creek, ID	Mallard	Osmer	8/19/94
12/03/94	WE Mammoth, CA	Mallard	Karmer	7/23/92

12/09/94	55 College City, CA	No. Pintail	Kalfsbeck	8/10/94
12/15/94	Buhl, ID	Mallard	Jardine	8/14/93
12/29/94	Lake Helena, MT	Mallard	Denler	8/24/94
09/10/95	Pakowki Lake, AB	Pintail	Schlobohm	8/19/94
09/30/95	Lake Helena, MT	Mallard	Mitchell	8/5/93
10/21/95	Los Banos, CA	Pintail	Teresi	8/23/95
10/02/96	Canyon Ferry WMA, MT	Canada Goose	Brattien	6/18/86
10/06/96	Gallatin River, MT	Mallard	Thompson	7/24/92
10/07/96	Salmon, ID	Mallard	Taylor	8/23/95
11/03/96	Great Salt Lake, UT	Mallard	Einerson	8/8/93
11/05/96	Lake Helena, MT	Mallard	Erpenbach	8/17/93
11/16/96	Grand Chenier, LA	Gadwall	Strenge	8/20/95
01/01/97	Merced River, CA	No. Pintail	Dowersock	8/23/95
01/08/97	FT. Hall, ID	No. Pintail	Wilson	8/18/94
01/09/97	Knott, TX	Mallard	Talbot	8/14/93
10/12/97	East Helena, MT	Canada Goose	Lay	6/18/86
10/12/97	East Helena, MT	Canada Goose	Lay	6/18/86
10/30/97	Challis, ID	Mallard	Dungan	8/19/92
11/04/97	Tule Lake NWR, CA	Mallard	Chambers	8/17/93
12/23/97	Greenleaf, ID	Mallard	Zenor	8/20/94
12/31/97	Leon, KS	Mallard	Baker	8/5/93
01/08/98	Lake Helena, MT	Mallard	Bayless	8/6/93
01/17/98	Pocatello, ID	Mallard	Orchard	8/20/94
12/29/98	Clancy, MT	Mallard	Hicks	8/20/94
01/09/99	Helena, MT	Mallard	Test	7/20/92
01/13/99	Kern Ref., CA	North. Pintail	Bartlett	8/23/95
01/16/99	Poppenish, WA	North. Pintail	Carlton	8/18/94
01/17/99	Sequin, WA	North. Pintail	Powers	8/18/94

Waterfowl hunters are monitored at Lake Helena by counting the number of vehicles parked at the WMA on the opening day of the waterfowl season. Use of the WMA has steadily increased. In 2002, more vehicles were counted at the WMA than ever before: 22 at the kiosk, 2 at the ponds, 3 on Collins Drive, for a total of 27 vehicles.

Greater Sandhill Cranes

Historically, the Rocky Mountain population of greater sandhill cranes nested in suitable habitats throughout the central and northern Rocky Mountains and the Great Basin from central Utah and west-central Colorado north through western Wyoming, Idaho, western Montana, and probably Alberta. Reports from explorers and settlers indicate cranes were common to abundant throughout this area until the latter part of the nineteenth century (Drewien and Bizeau 1974). By the early 1900s, cranes had becomes uncommon to rare within this region. This dramatic decline is attributed to a combination of factors but was principally due to habitat alteration and increased human intrusion on breeding areas (Smith et al. 1991).

A cooperative survey, organized by the Pacific Flyway Subcommittee on the Rocky Mountain Population of Greater Sandhill Cranes and the U.S. Fish and Wildlife Service, is conducted annually. The surveys are conducted during the same 1 week period annually in September to minimize overlap in counting. Fall surveys reveal a steady increase in the number of cranes in the Helena Valley. Sandhill crane nesting activity has been confirmed along the edges of Lake Helena and in other locations in the valley and along Little Prickly Pear Creek nesting is likely.

Rocky Mountain crane populations are steadily increasing and are estimated to be in excess of 22,000. In Montana, the 2003 survey of 15 sites revealed 4,964 greater sandhill cranes.

HELENA VALLEY
SANDHILL CRANE SURVEY

DATE	# OBSERVED	OBSERVER	COMMENTS
1989	65		
1990	99	Joslin	
1992	125	Joslin	
9/21/93	126	Joslin	
9/21/95	111	Joslin/Getz	George Holton 9/30=130 on Winterburn
9/19/96	5	Joslin/Powell	7 observed from ground 9/18/96 George Holton 9/21 counted 100
9/25/97	30	Joslin/Powell	5 Groups=3-18 in size - Masonic Home, Lake Helena Bench
9/15/98	89 (minimum)	Joslin/Powell	6 Groups=2-68 in size: Masonic Home, Lake Helena-w; Winterburn
9/15/99	75	Joslin/Powell	6 Groups=2-20 in size: Masonic Home, Lake Helena, Winterburn, Golf Course, Vo-tech School
9/8/00	134	Joslin/Powell	8 Groups=2-46 in size: Golf Course, Lake Helena, Winterburn, s of Masonic Home
9/4/01	146	Joslin/Powell	12 Groups=1-49 in size: 20 on WMA (13%), 124 on Winterburn (85%), 12 on Diehl
9/11/02	164	Joslin/Powell	3 Groups=2-158 in size: 2 n.LH; 4 Masonic Home; 156 n.of Regulating Reservoir
9/2/03	147 + 23*	Joslin/Lowe	17 Groups=1-50 in size. *First time cranes observed in Silver City area

Trumpeter Swans

Trumpeter swans had been eliminated from most of North America by 1900. In Canada and the lower 48 states, the last remnant flocks wintered near remote warm springs in the isolated high mountain valleys near Yellowstone. Knowledge of traditional migration routes to more suitable southerly wintering sites was lost during the species' decline. Although numbers have increased in recent decades, few trumpeters have successfully pioneered to historic winter habitats. Over 90% of the population has wintered in the Yellowstone area where increasing numbers, declining carrying capacity and severe weather create the potential for substantial winter mortality.

Beginning in 1990, the USFWS lead an effort to increase population security by restoring a broader winter distribution. Nearly 1,000 trumpeters were transplanted to alternate wintering sites in Oregon, Idaho, Wyoming and Utah. Hundreds were also dispersed by hazing. As of 1992, trumpeters were reported in all western states for the first time during the 1900's.

In an effort to quantify distribution of trumpeter swans that generally summer in Canada, observations of both marked and unmarked trumpeters was coordinated by the USFWS throughout the western United States. Transplanted swans were marked in one of the following ways, which identified the wintering area in which they were marked: green numbered neck bands, red numbered neck bands, pink or orange dyed portions of the body (right or left wing, neck, or tail).

Lake Helena is a favored stopover area for tundra swans, so a coordinated network of "swan watchers" was set up to census Lake Helena throughout March 1992 and watch for trumpeter swans that had been marked in Idaho, as well as unmarked trumpeters. That year, one trumpeter had been present on Lake Helena since February 16, then on February 26, 4 trumpeters showed up, one with a green neckband and an orange stained left wing at the west end of the Lake. On the 28th, the same 4 were observed on the west end. On 29th, 127 were at the east end of the lake including 4 with orange left wings (3 with green neckbands) and 2 with an orange tail. On March 1, 280 swans including the following trumpeters: 4 left wings orange (2 green neckbands), 3 orange tails, 1 pink tail, 1 possible orange neck. All of these observations included substantial numbers of tundra swans as well. Therefore, as many as 12 different, marked trumpeters, from at least 5 locations were noted on Lake Helena. In 1995, casual observations indicates that at least 4 trumpeters were present including 2 green neckbands. A systematic effort to quantify trumpeter swan use of Lake Helena has not occurred since 1992.

Blue Bird Boxes

Blue bird nest boxes have been installed along the access road to Lake Helena. The boxes have been inhabited primarily by swallows, wrens, and occasionally blue birds. Annual maintenance is required to keep the boxes clean and in working condition. Although maintenance materials and supplies would be provided by MFWP, finding volunteers willing to assume this task has been challenging.

Mountain Bluebirds primarily occur at Lake Helena; western bluebirds may occur. Swallows, wrens, sparrows and chickadees tend to use the boxes too. Nesting may begin the last week of March (males begin perching on box). Boxes must be clean. After each brood is fledged, the box should be immediately cleaned to reduce parasites. Two (maybe 3) broods can be raised in each box per year. The boxes must be checked weekly. Egg laying occurs as follows: 4-6 days; eggs - pale blue, blue-whitish, occasionally white (21 mm). Incubation: 14 days. Juvenile development: 21 days. Fledge: ~18 days. Bluebirds live about 4 years.

Birds Occurring in the Lake Helena Area

A list of bird species known to be present or presumed to be present based on existing habitat, local knowledge (Last Chance Audubon Club and MFWP observations) and database searches of species occurrence catalogued by the Montana Natural Heritage Program for the Quarter

Latilong (LL) NW28. Those confirmed to be present at Lake Helena are noted with an asterisk (*).

COMMON NAME	STATUS	Winter	Spring	Summer	Fall
Common Loon*	t	R	U	R	U
Pied-billed Grebe*	t	R	R	R	R
Horned Grebe*	t	-	U	R	U
Red-necked Grebe	B	-	R	R	R
Eared Grebe*	B	-	C	C	C
Western Grebe*	B	R	C	C	C
Clark's Grebe*	b	-	R	R	R
American White Pelican*	B	R	C	C	C
Double-crested Cormorant*	B	R	C	C	C
American Bittern	t	-	R	-	R
Great Blue Heron*	B	R	C	C	C
Great Egret	t	-	-	-	V
Snowy Egret	t	-	R	R	-
Cattle Egret	t	-	-	R	R
Black-crowned Night Heron	t	-	-	R	R
White-faced Ibis	t	-	R	-	-
Tundra (Whistling) Swan*	t	R	A	-	C
Trumpeter Swan*	t	R	U	R	U
Greater White-fronted Goose	t	-	R	-	R
Snow Goose*	t	R	U	-	U
Ross's Goose	t	-	R	-	R
Canada Goose*	B	A	A	A	A
Wood Duck*	B	R	U	U	U
Green-winged Teal*	B	R	C	C	C
Mallard*	B	A	A	A	A
Northern Pintail*	B	R	C	C	C
Blue-winged Teal*	B	R	C	C	C
Cinnamon Teal*	B	R	C	C	C
Northern Shoveler*	B	R	C	C	C
Gadwall*	B	U	C	C	C
Eurasian (European) Wigeon	t	-	R	-	-
American Wigeon*	B	R	C	U	C
Canvasback*	B	R	C	R	U
Redhead*	B	R	C	U	C
Ring-necked Duck*	B	R	U	R	U
Greater Scaup*	t	-	-	-	V
Lesser Scaup*	B	R	C	U	C
Harlequin	t	-	R	-	R
Oldsquaw	t	R	-	-	R
Surf Scoter*	t	-	-	-	R
White-winged Scoter*	t	R	-	-	R

COMMON NAME	STATUS	Winter	Spring	Summer	Fall
Common Goldeneye*	t	C	C	R	C
Barrow's Goldeneye*	t	U	U	R	U
Bufflehead*	b	U	U	U	U
Hooded Merganser*	b	R	U	R	U
Common Merganser*	B	U	C	U	C
Red-breasted Merganser*	t	R	U	-	U
Ruddy Duck*	b	R	U	U	U
Turkey Vulture*	B	-	U	C	U
Osprey*	B	-	U	C	U
Bald Eagle*	B	C	U	U	U
Northern Harrier*	B	R	U	U	U
Sharp-shinned Hawk*	b	R	R	R	R
Cooper's Hawk*	b	R	R	R	R
Northern Goshawk	B	R	R	R	R
Broad-winged Hawk	t	-	V	-	-
Swainson's Hawk	b	-	-	R	-
Red-tailed Hawk*	B	R	C	C	C
Ferruginous Hawk	t	-	-	R	R
Rough-legged Hawk	t	C	U	-	U
Golden Eagle*	B	U	R	R	R
American Kestrel*	B	R	U	U	U
Merlin*	B	U	U	U	U
Peregrine Falcon*	B	R	R	R	R
Gyrfalcon*	t	R	-	-	-
Prairie Falcon	b	R	R	R	R
Gray Partridge*	t	R	R	R	R
Ring-necked Pheasant*	b	U	U	U	U
Blue Grouse	b	R	R	R	R
Ruffed Grouse	b	U	U	U	U
Virginia Rail*	B	-	B	R	R
Sora*	B	-	U	U	U
American Coot*	B	U	A	C	A
Sandhill Crane*	B	-	C	C	C
Black-bellied Plover*	t	-	R	-	R
Killdeer*	B	R	C	C	C
Black-necked Stilt*	t	-	R	-	R
American Avocet*	B	-	C	C	C
Greater Yellowlegs*	t	-	U	R	U
Lesser Yellowlegs*	t	-	U	R	C
Solitary Sandpiper*	t	-	R	R	R
Willet*	t	-	C	U	U
Spotted Sandpiper*	B	R	C	C	C
Upland Sandpiper	b	-	R	-	-
Whimbrel	t	-	-	V	-

COMMON NAME	STATUS	Winter	Spring	Summer	Fall
Long-billed Curlew*	B	-	C	C	U
Marbled Godwit*	t	-	R	-	R
Sanderling*	t	-	R	-	R
Semipalmated Sandpiper	t	-	R	-	R
Western Sandpiper*	t	-	R	-	R
Least Sandpiper*	t	-	U	R	U
Baird's Sandpiper*	t	-	U	-	U
Stilt Sandpiper	t	-	-	-	R
Ruddy Turnstone*	t	-	-	-	V
Long-billed Dowitcher*	t	-	U	R	C
Common Snipe*	B	U	C	C	C
Wilson's Phalarope*	b	-	C	C	C
Franklin's Gull*	t	-	U	C	C
Bonaparte's Gull*	t	-	R	R	R
Ring-billed Gull*	B	R	A	A	A
California Gull*	B	R	C	C	U
Herring Gull*	t	R	R	-	R
Glaucous Gull	t	V	-	-	-
Black-legged Kittiwake	t	V	-	-	-
Sabine's Gull*	t	-	-	-	V
Caspian Tern*	B	-	U	U	R
Common Tern*	t	-	R	R	R
Forster's Tern*	B	-	U	U	U
Black Tern*	t	-	R	R	-
Rock Dove*	B	A	A	A	A
Mourning Dove*	B	R	C	C	R
Black-billed Cuckoo	t	-	R	R	-
Flammulated Owl	B	-	R	R	R
Great Horned Owl*	B	U	U	U	U
Snowy Owl	t	R	-	-	-
Northern Pygmy Owl	B	R	R	R	R
Great Gray Owl	t	R	R	R	R
Long-eared Owl	t	R	R	R	R
Short-eared Owl*	t	R	R	R	R
Northern Saw-whet Owl	t	R	R	R	R
Common Nighthawk*	B	-	-	C	R
White-throated Swift	b	-	-	U	-
Black-chinned Hummingbird	t	-	R	R	-
Anna's Hummingbird	t	-	-	-	V
Calliope Hummingbird	B	-	R	U	-
Broad-tailed Hummingbird	t	-	-	R	-
Rufous Hummingbird	B	-	R	U	-
Belted Kingfisher*	B	U	C	C	C
Lewis's Woodpecker	B	-	R	R	R

COMMON NAME	STATUS	Winter	Spring	Summer	Fall
Red-naped Sapsucker	B	-	R	U	R
Williamson's Sapsucker	b	-	R	R	-
Downy Woodpecker	B	U	U	U	U
Hairy Woodpecker	B	U	U	U	U
Three-toed Woodpecker	t	R	R	R	R
Black-backed Woodpecker	t	R	R	R	R
Northern Flicker*	B	U	C	C	C
Pileated Woodpecker	t	R	R	R	R
Olive-sided Flycatcher	t	-	-	R	-
Western Wood-Pewee*	B	-	-	C	R
Willow Flycatcher*	B	-	-	C	R
Least Flycatcher	B	-	-	C	-
Hammond's Flycatcher	B	-	-	U	-
Dusky Flycatcher	B	-	-	C	-
Cordilleran Flycatcher	B	-	-	R	-
Say's Phoebe*	t	-	R	R	-
Western Kingbird	B	-	R	U	R
Eastern Kingbird*	B	-	-	C	U
Horned Lark	B	U	U	U	U
Tree Swallow*	B	-	C	C	R
Violet-green Swallow*	B	-	U	C	-
Northern Rough-winged Swallow*	b	-	U	U	-
Bank Swallow*	B	-	U	U	R
Cliff Swallow*	B	-	A	A	-
Barn Swallow*	B	-	U	C	U
Gray Jay	b	R	R	R	R
Steller's Jay	b	R	R	R	R
Blue Jay	B	R	R	R	R
Pinyon Jay	B	U	U	U	U
Clark's Nutcracker	B	U	U	U	U
Black-billed Magpie*	B	C	C	C	C
AmericanCrow*	B	U	C	C	U
Common Raven*	B	C	C	C	C
Black-capped Chickadee*	B	C	C	C	C
Mountain Chickadee	B	C	C	C	C
Red-breasted Nuthatch*	B	C	C	C	C
White-breasted Nuthatch	B	U	U	U	U
Pygmy Nuthatch	b	R	R	R	R
Brown Creeper	b	R	R	R	R
Rock Wren	B	R	R	U	R
Canyon Wren	b	R	R	U	U
House Wren*	B	-	U	C	U
Winter Wren	t	R	-	-	-
Marsh Wren*	B	R	U	U	U

COMMON NAME	STATUS	Winter	Spring	Summer	Fall
American Dipper	B	U	U	U	U
Golden-crowned Kinglet	B	U	U	U	U
Ruby-crowned Kinglet	B	R	C	C	U
Western Bluebird	b	-	R	R	-
Mountain Bluebird*	B	R	C	C	C
Townsend's Solitaire	B	C	U	U	U
Veery	B	-	-	U	R
Swainson's Thrush	B	-	U	U	U
Hermit Thrush	B	-	U	U	U
American Robin*	B	U	C	C	C
Varied Thrush	t	R	-	-	R
Gray Catbird	B	-	-	C	R
Northern Mockingbird	t	-	V	V	V
Sage Thrasher	B	-	-	U	-
American Pipit*	t	-	U	-	U
Bohemian Waxwing	t	A	C	-	A
Cedar Waxwing*	B	R	U	C	C
Northern Shrike*	t	U	R	-	U
European Starling*	B	C	A	A	A
Cassin's (Solitary) Vireo	b	-	-	R	R
Warbling Vireo*	B	-	-	C	U
Red-eyed Vireo	b	-	R	R	R
Orange-crowned Warbler	b	-	U	U	U
Yellow Warbler*	B	-	C	C	U
Magnolia Warbler	t	-	-	V	-
Yellow-rumped Warbler*	B	-	C	C	U
Palm Warbler	t	-	-	-	V
American Redstart	B	-	-	U	-
Ovenbird	b	-	-	R	-
Northern Waterthrush*	B	-	-	U	-
MacGillivray's Warbler*	B	-	-	U	-
Common Yellowthroat*	B	-	-	C	U
Wilson's Warbler	b	-	U	-	U
Yellow-breasted Chat	b	-	-	R	-
Western Tanager	B	-	-	U	U
Rose-breasted Grosbeak	t	-	-	R	-
Black-headed Grosbeak	B	-	-	U	-
Lazuli Bunting*	B	-	-	U	R
Indigo Bunting	b	-	-	R	-
Green-tailed Towhee	B	-	-	U	-
Spotted Towhee	B	-	C	C	-
American Tree Sparrow*	t	C	U	-	C
Chipping Sparrow	B	-	C	C	C
Clay-colored Sparrow	b	-	-	U	-

COMMON NAME	STATUS	Winter	Spring	Summer	Fall
Brewer's Sparrow	B	-	U	U	-
Vesper Sparrow*	B	-	C	C	C
Lark Sparrow	B	-	U	U	U
Lark Bunting	B	-	-	R	-
Savannah Sparrow*	B	-	C	C	C
LeConte's Sparrow	t	-	-	-	V
Song Sparrow*	B	U	C	C	C
Lincoln Sparrow	b	-	U	R	R
White-throated Sparrow	t	R	-	-	R
White-crowned Sparrow	b	R	U	R	C
Harris's Sparrow	t	R	R	-	R
Dark-eyed Junco*	B	C	C	C	C
Lapland Longspur	t	R	-	-	-
Snow Bunting	t	R	R	-	-
Bobolink*	B	-	-	U	-
Red-winged Blackbird*	B	R	C	C	U
Western Meadowlark*	B	R	C	C	U
Yellow-headed Blackbird*	B	-	U	U	U
Rusty Blackbird*	t	R	-	-	-
Brewer's Blackbird*	B	-	U	A	A
Common Grackle	B	-	U	C	R
Brown-headed Cowbird*	B	-	C	C	-
Bullock's Oriole	B	-	-	U	-
Gray-crowned Rosy-Finch	t	R	-	-	-
Pine Grosbeak	t	R	-	-	R
Purple Finch	t	R	R	R	R
Cassin's Finch	B	U	U	U	U
House Finch	B	C	C	C	C
Red Crossbill	B	U	U	U	U
White-winged Crossbill	t	R	-	-	R
Common Redpole*	t	U	U	-	-
Hoary Redpoll	t	R	-	-	-
Pine Siskin	B	U	C	C	C
American Goldfinch	B	R	U	C	U
Evening Grosbeak	B	U	U	U	U
House Sparrow*	B	C	C	C	C
++ Bullock's Oriole	t	--	R	--	--

Relative abundance in suitable habitat by season:

A Abundant. A common species sometimes seen in large flocks.
C Common. Likely to be seen in suitable habitat.
U Uncommon. Present during season, but may not be seen.
R Rare. Seen only a few time during season, may be only in limited part of the habitat, and/or may be irregular in occurrence from year to year.
V Vagrant. Accidental in occurrence; out of normal range.

Status
B Direct evidence of breeding
b Indirect evidence of breeding
t No evidence of breeding

Seasons of Occurrence
W Winter: mid-November to mid-February
S Spring: mid-February to mid-May
S Summer: mid-May to mid-August
F Fall: mid-August to mid-November

West Nile Virus – Mosquito Abatement

West Nile Virus was reported in the United States in 1999 and in Montana in 2001. Mosquitoes are the primary carrier of West Nile Virus (WNV), so mosquito abatement has been encouraged by public health officials. Although mosquitoes are the vector for this disease, only certain species of mosquito carry the pathogen; it is important to note that mosquitoes constitute a significant food source for hundreds of species of birds as well as bats, amphibians, and fish. In an effort to maintain wetland ecosystems, MFWP does not sanction application of pesticides on its WMAs. Because WNV is an exotic virus, it will likely take several years before natural immunity can be built up in endemic birds and other wildlife.

MAMMALS

Mammals occurring in the area of Lake Helena

COMMON NAME	SCIENTIFIC NAME
Snowshoe Hare*	*Lepus americanus*
Columbian Ground Squirrel*	*Spermophilus columbianus*
Deer Mouse*	*Peromyscus maniculatus*
Muskrat*	*Ondatra zibethicus*
Porcupine*	*Erethizon dorsatum*
Coyote*	*Canis latrans*
Red Fox*	*Vulpes vulpes*
Raccoon*	*Procyon lotor*
Least Weasel	*Mustela nivalis*
Mink*	*Mustela vison*
River Otter*	*Leutra canadensis*
Striped Skunk*	*Mephitis mephitis*
White-tailed Deer*	*Odocoileus virginianus*
Mule Deer*	*Odocoileus hemionus*
Elk*	*Cervus elaphus*

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* Observed on Lake Helena WMA or periphery of the lake.

One furbearer trapping permit is granted during the spring trapping season (January 1 to April 15) to a successful applicant who has applied through a drawing. No trapping is allowed on the WMA until after the waterfowl hunting season.

REPTILES AND AMPHIBIANS

Reptiles and amphibians that occur in the Lake Helena area

COMMON NAME	SCIENTIFIC NAME	OCCURRENCE[1]
Plains Spadefoot	*Scaphiopus bombifrons*	V
Western Toad	*Bufo boreas*	V
Columbia Spotted Frog	*Rana luteiventris*	O
Northern Leopard Frog	*Rana pipiens*	V (pre-1990)
Painted Turtle	*Chrysemys picta*	O
Rubber Boa	*Charina bottae*	O
Terrestrial Gartersnake	*Thamnophis elegans*	V
Western Rattlesnake	*Crotalus viridis*	O

Occurrence:
1/ Format taken from Maxell et al (2003). V = voucher specimen; O = observation

FISH

Fish Composition and Fishing Use - The following fish species occur in Lake Helena: rainbow trout, brown trout, kokanee, walleye, smallmouth bass, sunfish, bluegill, largemouth bass, bullheads, common carp.

Fishery information and angler use of Lake Helena is presented in Lere (1989) as follows:

> Angler use is low on Lake Helena, ranging from 1,300 to 3,700 fishing days per year. Rainbow trout and brown trout are the most commonly caught species. Kokanee, walleye, and bass are also occasionally taken by anglers. Numerous species of fish have been introduced into Lake Helena since the 1920's, including sunfish, bluegill, largemouth bass, bullheads, and walleye. Fish were not stocked into the lake between 1962 and 1987 because earlier plants failed to produce an acceptable fishery. In 1988, the Department stocked 20,000 fry and 20,000 fingerling largemouth bass in an attempt to develop this fishery.

Fisheries management for Hauser Reservoir and thereby Lake Helena is defined in the Upper
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Missouri River Reservoir Fisheries Management Plan 2000-2009 (Dalbey, et al. 2000). Management emphasis for Hauser Reservoir is on rainbow trout, kokanee salmon, and walleye. Other managed species will rely on natural reproduction, including brown troute, largemouth bass, yellow perch, and burbot (ling).

A commercial carp fishing operation occurred on Lake Helena for several years. The Fisheries Division is responsible for reviewing and granting commercial fishing permits (Appx E). Issues and concerns raised by the public relative to commercial fishing on Lake Helena involved how permit revisions might impact the ecology of Lake Helena including: 1) effects of the harvest (removal of fish) as well as the consequences of not removing carp from the lake; 2) effects of the fishing operation (human activities); 3) effects of the fishing operation on the lake's ecology. In response to the 1992 application for a commercial fishing permit on Lake Helena, the Fisheries Division prepared an Environmental Assessment of the proposal in compliance with MEPA requirements. As part of that effort, a wildlife report was submitted entitled, Commercial Fishing Permit Wildlife Report - Lake Helena, October 24, 1992 (Appx E). The report included results of monitoring the operation on two days and two nest searches. In addition to information gathered in the field, literature reviews were conducted relative to several waterfowl issues including egg chilling, botulism, declining species of waterfowl, seasonal waterfowl breeding needs, shorebird feeding, parental care, and incubation. The history of aquatic vegetation in Lake Helena was also investigated and summaries of bird species occurring along Lake Helena were summarized from seasonal occurrence records.

The MFWP Commission, upon reviewing all relevant information, took action to grant the commercial carp fishing operation with stipulations. However, the permit was not exercised by the applicant, so commercial carp fishing has not effectively occurred since 1994. The carp population has subsequently exploded in the lake, leading to water turbidity, the loss of aquatic vegetation, and wildlife associated with or dependent upon aquatic vegetation.

APPENDIX D: LAKE HELENA WMA RECREATION & TRAVEL PLAN

ROADS

Vehicle access to Lake Helena is provided via a widened one lane, surfaced dirt road in the northeast, northeast ¼ of Section 22, Township 11 North, Range 3 West (Fig.2). A parking facility and turn-around area occurs on the northeast end of the WMA via Lake Helena Drive, and provides access to the lake. A small parking area on the southwest corner of the WMA allows foot access from Collins Drive.

The entrance road to the kiosk parking area remains open yearlong. This is the only authorized motorized use on the WMA. Vehicle access through the WMA to the shore of the lake is allowed beginning September 1 for waterfowl hunting and then for non-motorized winter recreation from the end of the waterfowl hunting season to March 1 (arrival of spring migrants and beginning of nesting season). Foot access is unrestricted, although voluntary restrictions will be posted in the kiosk at the parking area to help deter disturbance to wildlife at critically sensitive times of the year.

PARKING

Parking is allowed only in designated areas.

WATERFOWL REST AREA

A portion of Lake Helena is closed to hunting, harassment, or molesting of migratory waterfowl by order of the MFWP Commission as indicated in the Montana migratory bird hunting regulations since 1985. This rest area provides waterfowl a place to feed and rest during hunting season, as well as other seasons of the year, along the south shore of the lake where nutrient loaded warm water streams and irrigation canals keep the water open in the winter and provide a steady supply of food. The closure has been in effect for several years and is an important holding area for molting waterfowl during the summer.

RECREATION MANAGEMENT

The WMA is gaining popularity with bird watchers, photographers, nature lovers, falconers, ice enthusiasts, carp hunters, and others. Most if not all human activities have the potential to disrupt nesting, resting, and feeding of birds that rely on Lake Helena. It is proposed that measures be taken to minimize disruption to life-cycle needs of the avifauna using the lake by strictly enforcing the closure along the south shore of the lake. Other areas of the lake, including the WMA and the western and southwestern shoreline of the lake (up to the existing closure) are heavily used by waterfowl and shorebirds and may ultimately require seasonal use restrictions if human disturbance becomes problematic for birds and voluntary avoidance is ineffective.

- Discharge of any firearm, air or gas weapon or arrow from a bow is prohibited except during the legally established hunting season.
- Target practice or clay bird shooting is prohibited at all times on the WMA.
- Permanent hunting or wildlife viewing blinds will not be permitted.
- Dogs must be on a leash from April 1 to August 31. They must be under the owner's immediate control at all other times. Free roaming pets are prohibited
- Dog training by individuals is permitted under the above constraints of control. Commercial dog training is not allowed.
- Camping or overnight use is not allowed.
- No fires are allowed.
- Cutting of live trees or shrubs and damage or removal or defacing any property is prohibited.
- Motor vehicles must stay on the single road authorized for motor vehicle use.
- Motor vehicles must be operated in a safe manner.
- Removal or disturbance of topsoil is prohibited.
- Lands and waters must not be polluted in any manner.
- No commercial or political signs shall be posted.
- Discharge of fireworks is prohibited.
- Trapping will be by permit only.
- Hand launching of boats is allowed. Facilities and conditions do not accommodate vehicle launching of boats.
- No commercial activities are allowed on the WMA.
- All organized groups wishing to use the WMA for any purpose must secure a Group Use

Permit from the WMA manager.

By authority of MCA codes: 87-1-303 (establish regulations for lands) and 87-1-125 (enforcement of land regulations).

Public lands belong to everyone, but individuals also have responsibilities in protecting and preserving them. Pack out all litter. Leave all vegetation and natural objects undisturbed for others to enjoy. Respect other users and keep disturbances at a minimum.

Figure 9. Lake Helena Wildlife Management Area Travel Plan

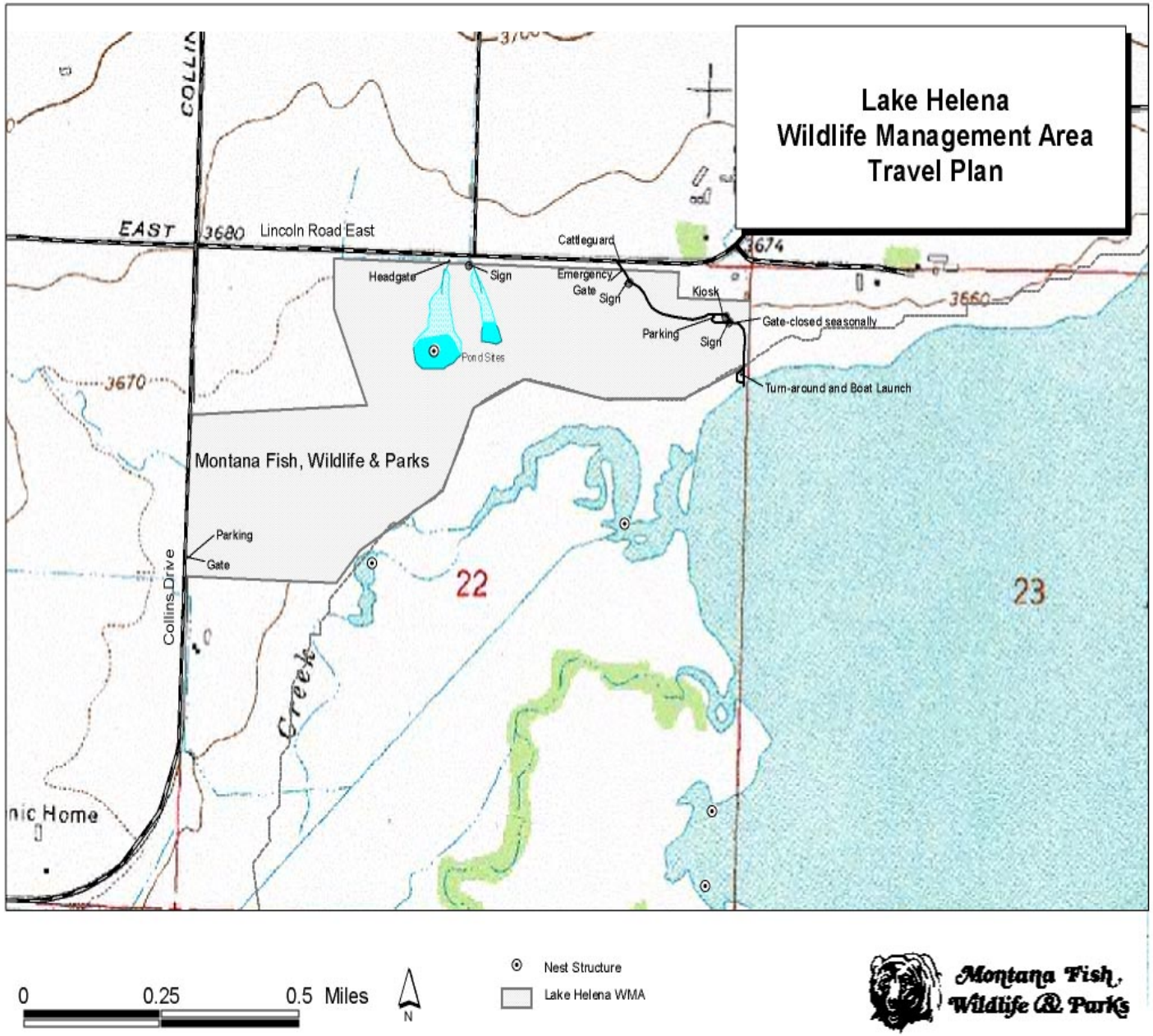

Lake Helena
Wildlife Management Area
Travel Plan
EAST
3680
Lincoln Road East
Cattleguard
3674
Headgate
Sign
Emergency
Gate
Sign
Kiosk
3660
Parking
Sign
Gate-closed seasonally
Pond Sites
3670
Turn-around and Boat Launch
Montana Fish, Wildlife & Parks
Parking
Gate
Collins Drive
22
23
Creek
nic Home
0
0.25
0.5 Miles
N
Nest Structure
Lake Helena WMA
Montana Fish, Wildlife & Parks

Figure 10. Lake Helena Waterfowl Rest Area Closure

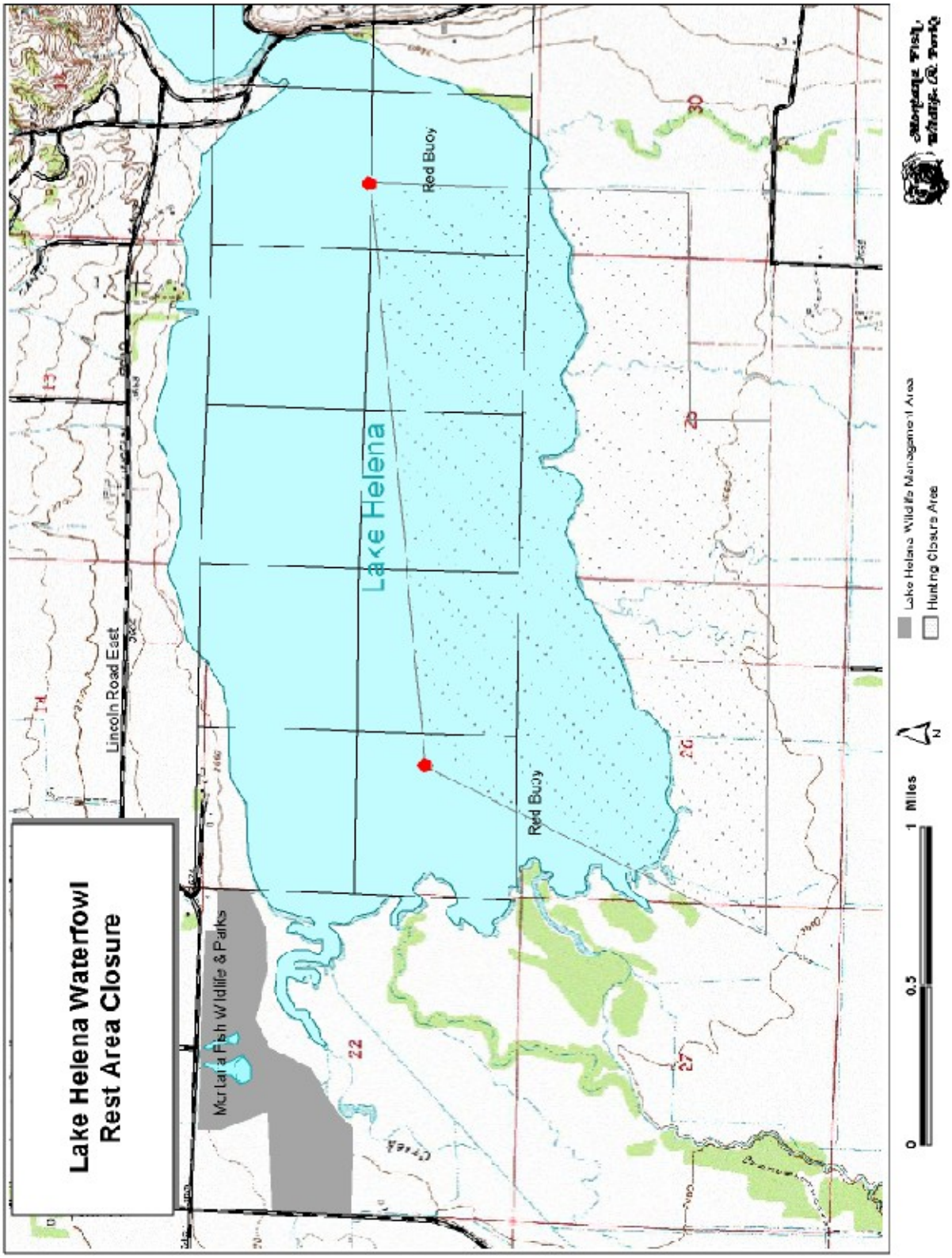
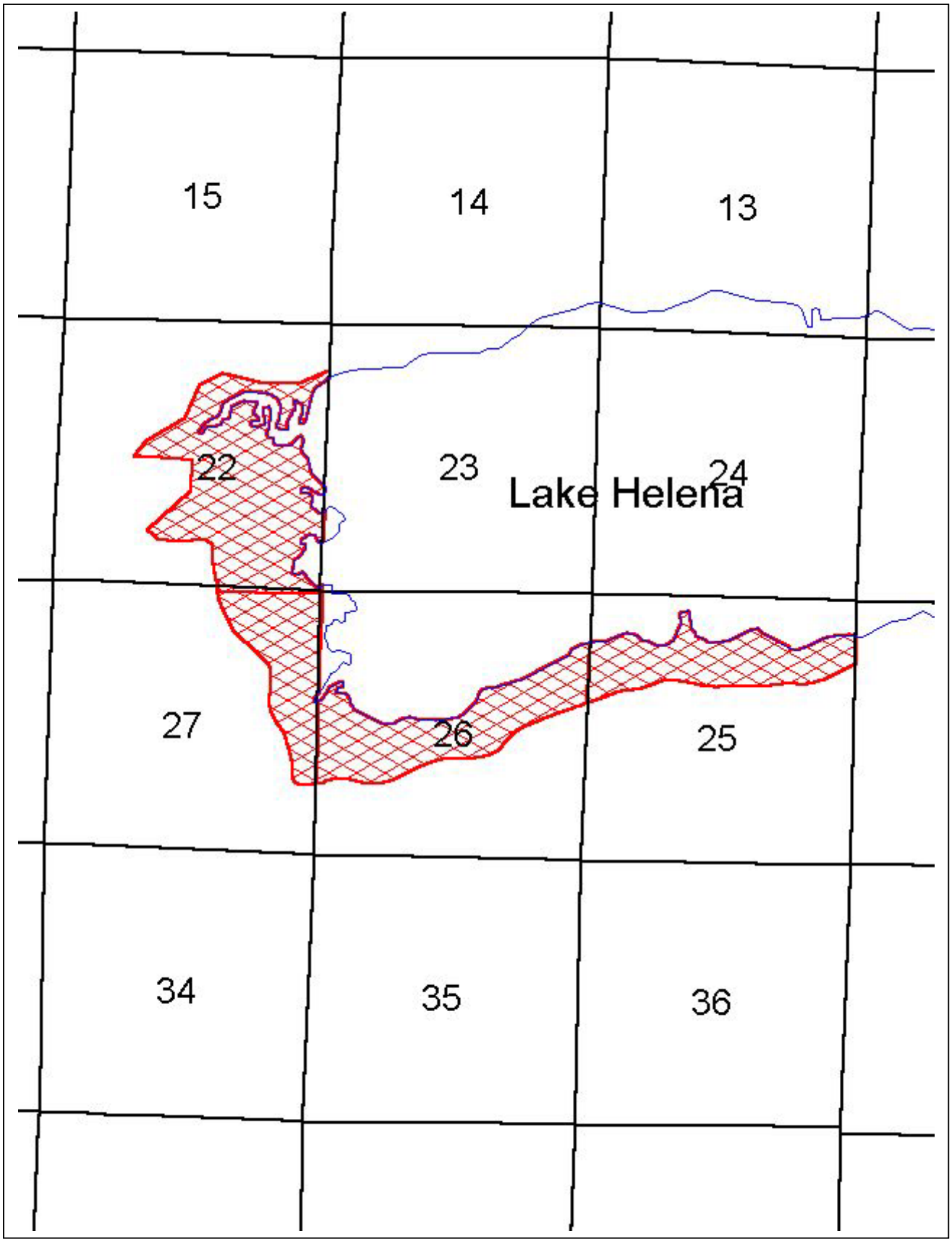


Figure 11. Lake Helena lands below the high water mark owned by PPL Montana.



APPENDIX E: LEGAL DOCUMENTS & REPORTS

The following documents are on file in the Helena Area Resource Office of MFWP, in three-ring binder entitled, APPENDIX E: Legal Documents and Reports.

1.	O'Connell Easement	12/8/1944
2.	Montana Power Lease	3/26/1961
3.	Fish and Wildlife Coordination Act Report – Helena Valley Rehabilitation and Betterment Program	5/18/1982
4.	Title Insurance	8/10/1987
5.	Appraisal	3/30/1988
6.	Montana State Land Board – Acquisition endorsement	9/1988
7.	Certificate of Survey #437214-E	9/1988
8.	Purchase Agreement	9/22/1988
9.	Warranty Deed	11/17/1988
10.	Livestock Grazing Lease	11/17/1988
11.	Road Easement	3/3/1989
12.	Access Road Environmental Assessment	6/4/1992
13.	Water Availability and Use	1/6/1995
14.	Hauser Reservoir (& Lake Helena) Fisheries Five Year Plan	9/6/1989
15.	Lake Helena Commercial Fishing Regulations Environmental Assess.	4/3/1992
16.	Commercial Fishing Permit - Wildlife Report	10/24/1992
17.	Commercial Fishing Regulations – MFWP Commission	2/9/1993
18.	Waterfowl Pair Ponds Environmental Assessment	3/10/1993
19.	Lake Helena ARM Rule – No Wake	4/3/1998
20.	FERC License No. 2188	9/27/2000
21.	FERC Amendment – Wildlife & Habitat Monitoring & Enhancement Plan	5/21/2002
22.	Concrete Mat Boat Ramp Corp of Engineers 404 Permit	10/3/2000
23.	Boat Ramp Stream Preservation Permit MISC-MFWP	10/10/2000
24.	Pennsylvania Power & Light-Montana, Permit No. 2000-1.	1/2/2001
25.	Region 3 Noxious Weed Management Plan and Environmental Assessment	2001
26.	Group Use Permit Application – Wildlife Management Area	2003
27.	Lake Helena Wildlife Management Area Plant Species List	6/2003

Actual details of construction and specifications of projects can be located in the Lake Helena file at HARO or the Design and Construction Section of the Field Services Division of FWP in Helena.

APPENDIX F: LAKE HELENA WMA 2004 WORK PLAN & PROJECT DESCRIPTION

SBAS Project No.: Fiscal Year: 2004

Project Title: Lake Helena Wildlife Management Area

Project Manager: Gayle Joslin

Budget Total

Number of FTEs: Total:

Perm Base:		Temp Base:	0
Perm NonBase:	0	Temp NonBase:	0

Is this a continuing project? Y Complete (YRMM):

Project Priority:

Is funded by redirected funds? N Amt Redirected: $ 0

Describe how this project relates to problems and/or strategies:
Waterfowl populations throughout North America have been on the decline for decades as a result of drainage of wetlands, urban sprawl, agricultural conversion, industrial development, and changing climate. The Lake Helena WMA was acquired to improve waterfowl nesting, brood rearing, resting and staging habitat in the Helena Valley as well as provide access for waterfowl hunting opportunity. Over the years, the environment of the WMA has progressively evolved so that waterfowl and other bird nesting cover have dramatically improved. The ecological diversity of the area has markedly evolved, although noxious weed control is a on-going issue. Hunters consistently use the WMA to gain access to the lake during all waterfowl seasons. The value of the WMA has spurred interest in improving additional waterfowl habitat surrounding the lake and cooperative efforts with PP&LM who controls the lake levels and use of the flood zone surrounding the lake.

What are the benefits that will result?
Opportunities to hunt and view a variety of waterfowl will be improved as individual management actions promote habitat enhancement and improved vegetation composition of the area. Management regulations addressing vehicle access, hunting regulations, seasons of use, and other recreational activities will serve to balance the increased human demands on the WMA with the habitat and life-cycle needs of endemic wildlife. Additional nesting/resting habitat will result if islands can be installed to mark the corners of the Waterfowl Rest Area in lieu of buoys.

List tasks to be accomplished and timeframes for completion:
Wildlife Biologist's Duties:
Annually conduct certain waterfowl surveys in addition to those conducted for the upper

Missouri River system by the Townsend area wildlife biologist. Maintain the waterfowl rest area closure, nesting structures, photo plots, pond levels, plant health and diversity, and facilities of the WMA. Solicit seasonal and/or volunteer assistance to help complete these tasks. Biologist will evaluate survey data and initiate needed population and land management procedures to maintain and where possible increase wildlife on the area. Habitat work will include enforcement of restrictions on trespass livestock grazing and contract weed spraying.

ANNUAL MAINTENANCE SCHEDULE

January

- ✓ Waterfowl nesting structures refurbished as necessary with additional gravel, hay, and routine maintenance. Requires very cold, frozen water conditions.
- ✓ Fly mid-winter waterfowl survey of upper Missouri River (if funds available – Townsend Office)
- ✓ Fly Canada goose production survey (if funds available – Townsend Office)

February

- ✓ Monitor regulation compliance by winter recreationists.

March

- ✓ Lock the gate at the parking lot near the kiosk on March 1.
- ✓ Refurbish bluebird boxes early in month as nesting may begin by end of March.

April

- ✓ Spring photo plots – every other year.
- ✓ Insert boards in dikes to establish desired water levels in ponds.
- ✓ Fly Canada goose breeding ground survey (Townsend Office).

May

- ✓ Adjust irrigation return water flows to the ponds.
- ✓ Erect the water fence along the eastern boundary to prevent cattle trespass.

June & July

- ✓ Necessary painting and maintenance of kiosk, fences, signs, cattleguards, and other facilities on the WMA.
- ✓ Summer photo plots – every other year.
- ✓ Spray weeds (contractor).

August

- ✓ Unlock gate at the parking lot August 31.
- ✓ Spray weeds as necessary (contractor).

September

- ✓ Maintain waterfowl rest area closure boundaries (buoys, Carsonite posts, signs).
- ✓ Sandhill Crane aerial survey of the Helena Valley.
- ✓ Reflood the ponds.

- ✓ Spray weeds if additional treatment is necessary (contractor).

October/November/December

- ✓ Monitor hunter use and user compliance with WMA and lake regulations.
- ✓ Opening day of waterfowl season – count vehicles and estimate hunter use of the WMA.

Project activities during 2004, and projected future projects beyond that fiscal year are itemized chronologically according to objective and strategy listed in the management plan. Activities conducted to date that have met management plan goals are also described.

Statement of work to be done and time frame for completion of various tasks: Project number coincides with Objective, Issue, and Strategy number found in the plan. Fiscal year for planned work is given in parentheses, however, if circumstances are favorable, the project may occur earlier.

OBJECTIVE 1: Improve waterfowl production and recruitment through land stewardship programs that stimulate the landscape to achieve its maximum potential, and where appropriate provide supplemental nesting structures.

Project 1.1.a. Upland cover adjacent to LHWMA ponds has been converted from grazing-tolerant vegetation into dense grass and forb cover. Nesting cover for upland nesting waterfowl and song birds, as well as soil and vegetation conditions have dramatically improved since 1991 with suspension of livestock grazing. There are no plans to reinstate livestock grazing. **(on-going)**

Project 1.1.b. Changes in vegetation structure are being monitored through established photo plots on three representative upland sites to quantify and assess adequate cover for upland nesting waterfowl. Photo plots were established in April 1990, and were photo monitored during March-April and mid-July annually until 1997 when the monitoring was adjusted to a biennial schedule **(on-going)**

Project 1.1.c. Emergent vegetation along pond margins has responded spectacularly with water level manipulation. The amount of edge along pond margins has increased, providing more pair habitat, brood cover, nesting habitat, and escape cover (molt). The possibility of developing additional pair habitat in the western portion of the WMA will be evaluated **(2005)**: development of additional pond(s), and/or retaining water on the WMA from return irrigation flow, and then clearing emergent vegetation to create pair water.

Project 1.1.d. Map suitable nesting structure sites on and immediately adjacent to the WMA, indicating most suitable type of structure (culvert, pole, tube, box, etc.), and providing for adequate size of pair territory (**2006**). Explore nest structure possibilities with adjacent private landowners.

Project 1.2.a. See Project 1.1.d.

Project 1.2.b. Goose brood rearing habitat may be limited on Lake Helena, but in general geese are thriving, therefore efforts to improve access to existing brood rearing areas along the shores of Lake Helena are a lower priority and will be revisited in the future (**2007**). At that time, if it becomes necessary, emphasis will be to attempt to secure suitable habitat and assure that palatable grass species exist. Almost no opportunity to provide brood rearing areas occurs on the LHWMA since the WMA does not extend to the lake. Owners of Lake Helena shoreline could be approached to see if they would be willing to improve brood rearing shoreline habitat through appropriate cattle grazing, willow control and grass seeding. Habitat enhancement incentives or possible easement options could be utilized.

Project 1.3.a. Evaluate the potential for constructing islands within the lake with PP&LM to provide secure nesting and loafing sites, if cost-effective fill material can be located. Islands placed at the corner points of the waterfowl rest area closure would serve a dual purpose in establishing permanent marker structures for the northern boundary of the rest area within the lake. Buoys used in the past have not functioned satisfactorily. **(2004)**

Project 1.3.b. Evaluate the potential to develop additional small ponds to improve breeding pair habitat: See Project 1.1.d. **(2005)**

Project 1.3.c. Evaluate the potential to improve pair water by selectively removing emergent vegetation to increase the interface between open water and emergent nesting cover. See project 1.1.d. **(2005)**

Project 1.4.a. In cooperation with fisheries personnel, evaluate methods to improve submergent vegetation production. Possibilities include installation of special structures in the Causeway to catch carp, ways to encourage commercial fishing to reduce rough fish that damage aquatic vegetation. **(2004)**

Project 1.4.b. Evaluate opportunities for implementing hay-grain rotations on adjacent fields in the context of grain availability and distribution in the Helena Valley. Contact owners of strategically located agricultural fields regarding possible acquisitions or easement arrangements. **(2007)**

Project 1.5.a. Current measures to reduce predation upon waterfowl will continue, including: improvement of both emergent and upland nesting cover, clean-up of sites that are attractive to predators, issuance of a winter trapping permit. It is recognized that recreational trapping by itself will not control predation of nests, however trapping may help to reduce numbers of some species, such as fox and raccoons which have been increasing in recent years. Trappers will be canvassed to determine the type and numbers of wildlife they trapped on and adjacent to the WMA. **(2005)**

Project 1.5.b. Predator habitat - see 1.5.a. **(on-going)**

Project 1.5.c. Improving nesting cover over the entire management area by creating dense blocks of attractive cover may have a more positive effect on nesting success than a limited trapping program. Comparison of adjacent properties that are grazed, but similar in upland characteristics to the WMA could provide some level of quantitative evaluation of the value of the upland cover in preventing predation. This thesis might lend itself to a student project (high school senior thesis, College project, Eagle Scout merit project). **(2007)**

Project 1.5.d. Construct islands within the lake to provide secure nesting sites, if cost-effective fill material can be located. See 1.3.a. **(2004)**

Project 1.5.e. Expansion of wetlands throughout the WMA through water level manipulation may be a deterrent to some predators. See 1.1.d. **(2005)**

OBJECTIVE 2: MAINTAIN/IMPROVE WATERFOWL RESTING AREAS

Project 2.1.a. Coordinate with MFWP Enforcement personnel to strictly enforce the waterfowl rest area closure. **(2004)**

Project 2.1.b. Cooperate with PP&LM to permanently define and mark a yearlong rest area for waterfowl in the south portion of the lake, either by establishing islands at the legal corners of the rest area closure that would also serve as important loafing and nesting habitat, or research a heavy-duty buoy design that would withstand wind and ice action, and yet remain in place. **(2004)**

Project 2.1.c. Post requests for people to voluntarily limit their activities along the western shoreline of the lake during the spring and summer (to include the western shoreline to the west boundary of the waterfowl rest area) during the March 1—August 31 period. Such a request would not prevent people from approaching or using the shoreline occasionally but the intent would be to raise awareness of waterfowl needs during this time and reduce disturbance. **(2005)**

Project 2.1.d. Educational materials about the life-history and habitat needs of various species of birds will be posted at the WMA informational kiosk and changed periodically to raise awareness of various bird needs. **(2005)**

Project 2.1.e. Identification of anchor points and timing restrictions for commercial carp fishing would minimize waterfowl impacts (previously implemented, 1993).

Project 2.1.g. No commercial activity will be allowed on the WMA. **(on-going)**

Project 2.1.h. Continue aerial surveys of Lake Helena and surrounding areas (Canada goose

brood, mid-winter waterfowl, sandhill crane pre-migration surveys, etc) **(on-going)**

OBJECTIVE 3: MAINTAIN/IMPROVE ECOLOGICAL DIVERSITY AND STABILITY

Maintain or improve the ecological diversity and stability of the area, and within the parameters of existing habitat, encourage nesting and production of native birds and thereby provide for wildlife viewing opportunities.

Project 3.1.a. Artificial nest structures will continue to be maintained and appropriately established adjacent to the WMA and Lake Helena (blue bird boxes have been placed along the boundary of the WMA) to provide nesting opportunities for cavity dependent species. **(on-going, but volunteer assistance required)**

Project 3.1.b. In cooperation with PP&LM, evaluate the possibility of erecting an osprey nest structure at the east end of Lake Helena since nest sites are rare. Care must be taken to locate structures where strong winds are not as likely to blow young from the nest, or blow the nest itself away. **(2005)**

Project 3.1.c. Search out an entity (group or individual) to adopt a blue bird box route. Boxes would be maintained and cleaned on a regular schedule. Monitoring and maintenance materials would be provided. An option would be to keep records of annual nesting activity (species nesting and whether birds were fledged). Information would be submitted to FWP for recording in annual WMA results. **(continuing search)**

Project 3.1.d. Carp reduction – See 1.4.a. **(2005)**

Project 3.2.a. Noxious weeds are controlled in accordance with MFWP Region 3 Noxious Weed Management Plan, along project roads, canals, boundary fences, and heavy use areas such as parking areas by using chemical and other means of control, primarily during mid-summer to fall to avoid disturbing nesting birds. **(on-going)**

Project 3.2.b. Noxious weeds on WMAs -- See Project 3.2.a. **(on-going)**

Project 3.2.c. Treatment methods other than chemical have been employed to control or contain weed infestations in particularly sensitive areas, including hand pulling, mowing along roadways, and biological control agents. **(on-going)**

Project 3.2.d. Weed control – timing. See project 3.2.a **(on-going)**

Project 3.2.e. Chemical application is now carefully controlled and monitored to prevent accidental mortality of shrub species. **(on-going)**

Project 3.2.f. In order to control weed infestations, MFWP is in communication and works with adjacent landowners and the County Weed Board to control infestations occurring on

FWP and adjacent private lands. **(on-going)**

Project 3.2.g. Post a notice in the WMA kiosk describing weed control activities on the WMA, including methods and timing. **(2005)**

Project 3.2.h Contract to compile a list of plant species occurring on the WMA: uplands, emergent, and aquatic plant species. **(2004)**

OBJECTIVE 4: MAINTAIN WATERFOWL HUNTING ACCESS

Project 4.1.a. Investigate potential access points to the lake through lakeshore landowners who may be interested in a conservation easement or some other method to provide public access to the lake. **(2006)**

Project 4.1.b. Investigate the potential use of Block Management or Access Montana resources to provide hunting access through other lands surrounding the lake. Two large landowners on the south side of the lake have been approached but are not interested in the Block Management Program at this time. **(2003, on-going)**

Project 4.1.c. Fishing Access could lead to conflicts with wildlife -- See Project 4.1.a. **(2005)**

Project 4.1.d. Pursue a long-term lease permit with PP&LM, or some other long-term venue, to assure public access to Lake Helena. **(2004)**

Project 4.1.e. Prepared a brochure about the Lake Helena WMA that includes the Travel Management Plan and other management regulations of the WMA and the lake. Make the brochure available to the public and post it at the WMA kiosk. **(2004)**

Project 4.1.g. The main access road into the WMA will be maintained. **(on-going)**

Project 4.1.h. A small parking area off of Collins Drive would be created to accommodate 4 vehicles. **(2006)**

Project 4.1.i. The headgate/pond entrance off of Lake Helena Drive offers a third entrance to the WMA, although parking is limited to 2 or 3 vehicles. **(**completed **1996)**

Project 4.1.j. A gate at the parking lot will be designed and installed that will allow wheelchair access and canoes to be drug or wheeled through the gate. **(2004)**

Project 4.1.k. Strictly enforce Travel Management provisions. **(on-going)**

Project 4.2.a. Develop a cooperative agreement with PP&LM to retain water in Lake Helena

when draw-downs of the Missouri River are necessary. This would require:

- Retrofitting the Causeway with steel plates that could be lowered into place to hold water in Lake Helena during the river draw-down;
- Cost sharing between PP&LM and MFWP to implement the plan;
- Communication between PP&LM and MFWP to activate the Lake Helena water retention plan as necessary. **(**completed **2001)**

Project 4.3.a. The entrance sign and interpretive sign in the WMA kiosk indicate that:

- the WMA was purchased with hunter dollars
- wildlife habitat is the top priority of the WMA
- hunting takes precedence over other recreational uses during the hunting season

These signs will be reevaluated to determine whether they adequately and concisely convey how and why the WMA was purchased. **(2004)**

Project 4.3.b. Modify the WMA regulations to allow winter ice-recreationists to use the WMA (following all regulations) from the end of the waterfowl hunting season to the beginning of the return of spring waterfowl (March 1). **(2004)**

Regional Supervisor Approval:

Div. Administrator Approval:

APPENDIX G: END OF YEAR PROJECT REPORT
/JOB PROGRESS REPORT
FY03: July 1, 2002 – June 30, 2003

Division Wildlife Region 3 SBAS Project Number
Project Title Lake Helena Wildlife Management Area
Federal Aid Project Number _____(if Fed Aid Project)
Date Project Started 11/17/1988 Ending Date on-going (or indicate if ongoing)

A. List work scheduled to be completed for this project (include performance standards from your FY03 work plan). Write either "completed", "not completed", or "partially completed" beside each item listed to indicate work actually done last FY.

List tasks from work plan:

Wildlife Biologist's Duties:

- Ensure habitat management actions are taken at appropriate times to maintain pond water levels and thus encourage development of emergent vegetation. Completed/On-going
- Evaluate opportunities to augment the function of the WMA by investigating habitat enhancement or easement possibilities on lands surrounding the lake to maintain or increase wildlife of the area. Completed/On-going
- Conduct population surveys in September for sandhill cranes. Completed/On-going
- Conducted mid-winter waterfowl surveys in January, Canada goose production surveys in June, and Canada goose breeding surveys in April annually (by Canyon Ferry WMA biologist or technical support staff). Partially Completed/On-going
- Refurbished/maintained waterfowl nesting structures in winter. Partially Completed.
- Enforce restrictions on trespass livestock grazing. Completed/On-going
- Contract weed spraying. Completed/Ongoing
- Monitor habitat through photo plots. Completed/Ongoing
- Monitor public use of the WMA and complicance with regulations through personal contacts with users. Completed/On-going

B. Describe any variance between work scheduled and work completed and explain: (i.e., problems incurred and resulting impacts to attainment of project objectives).

Canada goose production surveys (June) have not been completed since 1996 and Canada goose breeding surveys (April) have not been conducted since 1997. Workload and budget in the Townsend Office (Canyon Ferry WMA assistant personnel) have precluded these surveys. However, mid-winter waterfowl surveys have been flown nearly every year since 1987.

Refurbishment of waterfowl nesting structures require frozen conditions and volunteer personnel, neither of which simultaneously materialized for a duration adequate to maintain every structure. Both volunteer personnel and timely periods of cold weather have been limiting.

C. Discuss impact(s) of project variance to MFWP programs (as related to objectives stated in the strategic plan, species plans or other long range documents). Also discuss any significant accomplishments of this project (state in terms of outputs produced if possible, i.e. recreation days, etc.)

Since preemption of Canada goose breeding ground and production surveys in the late 1990s, trend information for geese is no longer available.

Although weed control has not deviated from plan, it is apparent that alteration of the weed control program is necessary. Weed control has resulted in substantial reduction of diffuse knapweed. However, in an effort to minimize disturbance to breeding birds, spraying has not been conducted until later in the summer, allowing whitetop to gain a foothold and expand. Whitetop is most susceptible to spring spraying and may need special treatment through backpack spray application.

Projects completed on, or in association with the Lake Helena WMA are listed below. Dates of completion are noted. Documentation is on file for each project in the location specified:

Access Road Construction The road entrance to Lake Helena was moved, a parking area and turn-around space near the lake was constructed to minimize ground disturbance, and to control driving up to the edge of the lake. An Environmental Assessment was completed in June 1992, and the project was completed in August 1992. The EA resides in the Lake Helena WMA file in the Helena Area Resource Office (HARO) of Region 3. Details of project construction exist in the project file of the Lands Unit of FWP.

Livestock Fence A combination jack-leg/metal post fence was constructed along the southern boundary of the WMA up to the edge of the high water mark in west Section 22, at which point the fence continues straight toward the lake through PP&LM property to the irrigation ditch (east Section 22), then ends. Fencing beyond this point was not necessary since the ditch itself poses a relatively impassable barrier to livestock. The fence replaces the existing southern boundary fence which had been in poor repair and had been the source of livestock trespass problems for a number of years. The project was initiated in February 1993 and completed in April 1993. The project's history and specifications exist in the project file of the Lands Unit and HARO of FWP.

Nest Structures Five culvert, one tire nest, and five fiberglass cylinder nest structure have been placed in suitable habitat surrounding Lake Helena (Fig. 2). One of the structures occurs on the WMA. Construction and installation specifications are on file in the WMA file in the Helena Area Resource Office of Region 3. The culvert structures are located in:

1. SE¼ of SE¼ Sec. 22, T11N, R3W near the west shore of Lake Helena
2. SW¼ of SE¼ Sec. 29, T11N, R3W in small agricultural pond along Interstate 15 frontage road between Tenmile and Silver Creeks (not depicted in Fig. 2)

3. S¼ of NW¼ Sec. 22, T11N, R3W in marsh pond east of Collins Drive and west of Lake Helena
4. SE¼ of NW¼ Sec. 22, T11N, R3W in Silver Creek slough just as it enters Lake Helena
5. NE¼ of NW¼ Sec. 22, T11N, R3W in the larger, more westerly pond in the north portion of the WMA off of Lincoln Road East.

The one tire/pole nest structure and one fiberglass cylinder is located in the same bay as the first culvert nest, in SE¼ of SE¼ Sec. 22, T11N, R3W near the west shore of Lake Helena. The culvert structure and the tire structure placed in Lake Helena were installed February 15, 1990. Culverts in Silver Creek and the marsh pond off Collins Drive were installed February 20, and the Frontage Road culvert was installed on February 26, 1993. The WMA large pond culvert was placed in 1993. Three fiberglass cylinders were placed upstream from the culvert in the Silver Creek slough and one was placed in the marsh pond off Collins Drive. All fiberglass cylinders were placed in 1994-95.

Waterfowl Pair Ponds Two waterfowl pair ponds were constructed in 1993 in the uplands of the WMA, in N½ of N½ of Section 22, T11N, R3W as a mitigation requirement of construction of the access road. The ponds provide improved waterfowl pair and brood rearing habitat on the WMA. An Environmental Assessment (March 1993) was completed prior to implementation of this project. The EA resides in the Lake Helena WMA file in the Helena Area Resource Office of Region 3. Details of project construction exist in the project file of the Lands Unit of FWP.

Interpretive Kiosk An interpretive kiosk was erected in the parking area of the WMA in July 1996 by MFWP Shop personnel.

Signs Signs for the WMA were created by MFWP Sign Shop in Whitehall (Design and Construction Bureau). Type, location, and date of sign installation:

- Wetland development sign (1994)
- Entrance sign to WMA (1996)
- Parking lot gate sign (1996)
- Turnaround sign at the boat launch area (1996)
- Interpretive sign inside the kiosk (1998)
- Assorted metal boundary signs.

Fence along Access Road A rail fence was constructed along the main access road, from Lincoln Road East to the edge of the lake in September 1999 by the MFWP Capitol Grounds crew. The purpose of the fence is to prevent off-road driving into the WMA.

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